

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 704.—VOL. XIX.]

LONDON, SATURDAY, FEBRUARY 17, 1849.

[PRICE 6D.]

### STEAM-ENGINE AND VALUABLE MINING MATERIALS FOR SALE.

**MR. TIPPET** has been favoured with instructions to OFFER FOR SALE, BY PUBLIC AUCTION, on Tuesday, the 20th day of February inst., at Eleven o'clock in the forenoon, at VENTONGLIMPS MINE, in the parish of FERRANZABULOE, CORNWALL, the following valuable

#### MINING MATERIALS—VIZ.:

STEAM-ENGINE, 50-horse cylinder, one boiler, about 13 tons, 7 feet stroke in the shaft, with the timber and first piece of rod, &c., in very superior condition. Shears, 16 1/2-inch pumps, 1 1/2-inch ditto, 2 1/2-inch ditto, 3 1/2-inch ditto, 17-inch stuffing-box and gland, 1 1/2-inch doorpiece, 1 1/2-inch ditto, 2 1/2-inch ditto, 17-inch windbox, 1 1/2-inch ditto, 1 1/2-inch ditto, 2 1/2-inch ditto, 3 1/2-inch working barrels, 1 1/2-inch ditto, 1 1/2-inch ditto, 2 1/2-inch plunger poles, 2 smith's bellows, 36 and 49-inch balance-bob, bucket prongs, crab winch, horse engine, beam, scales, and weights, old iron, and miscellaneous effects.

The same may be viewed on application at the mine; and for further particulars, application may be made to I. I. Iselin, Esq., 14, George-street, Mansion-house, London; Mr. Thomas Blenkinsop, St. Agnes; or at the auctioneer's office, Pydar-street, Truro, Truro, Feb. 5, 1849.

### VALUABLE STEAM-ENGINES, AND OTHER MINING MATERIALS, AT WHEAL RUBY AND GARLIDNA MINES, IN WENDRON.

**MR. T. H. EDWARDS** will sell, BY AUCTION, on Wednesday, the 28th day of February inst., at Eleven o'clock in the forenoon, at WHEAL RUBY AND GARLIDNA MINES, near PORKELLIS, in the parish of WENDRON, the following

#### MINING MATERIALS AND OTHER EFFECTS—VIZ.:

A very excellent 70-horse DRAUGHT ENGINE, with two boilers, and every other requisite complete. A 55-horse ENGINE, without boiler. A 23-horse STEAM-ENGINE, with boiler, and 72-heads, complete. A 36-horse WATER-WHEEL, with iron axle, lifters, &c.; a 22-horse ditto, with oak axle and ring; water stamps, with 6-heads, capstan and shears. 120 fathoms of 12-inch capstan-rope (nearly new), horse-whim and shaft tackle, punching machine, crab, and winch. 10 1/2-foot 14-inch plunger poles; a 14-inch H-piece, top door piece, windbox, and stuffing-box; 5 1/2-foot 12 and 18-inch doorpieces; 5 1/2-foot 12, 13, and 5-inch windboxes; a 30-fathoms 14-inch plunger lift, with doorpieces, &c., complete; 10 fathoms of 15-inch r-amps, 10 ditto of 14-inch ditto, 30 ditto of 13-inch ditto; 30 ditto of 12-inch ditto, 10 ditto of 9-inch ditto; 14, 13, 12, 11, and 8-inch working barrels; a quantity of 12 and 8-inch rod timber.

Several pairs of faggotted rod-plates, 2-inch bucket-rods, and other chains, tram-road iron, saddles and waggon, a miners' dial, smith's bellows, anvils, screw plates and taps, whim and winch kiddles, old brass, wrought and cast-iron, ladders, launders, stamps and other tools and shears, a quantity of timber, of various descriptions.

All the ACCOUNT-HOUSE FURNITURE, and numerous other articles. Also, the UNEXPIRED TERM of 66 years of and in the newly-built and commodious DWELLING-HOUSE and SCHOOL BUILDING on the mine, 75 feet by 27 feet within, with an acre of land adjoining, properly fenced and improved.

The whole of the above materials are in excellent condition, and well deserving the attention of miners and others.

An early attendance is particularly requested.

Dated Feb. 12, 1849.

### VALUABLE 63-inch CYLINDER PUMPING ENGINE, THREE BOILERS, AND OTHER USEFUL MINE MATERIALS FOR SALE.

**MR. THOMAS RICHARDS**, Mine Agent and Auctioneer, Marazion, is instructed to hold a final and unreserved PUBLIC AUCTION, at WHEAL GREY, in the parish of GERMOL, on Tuesday, the 6th of March, for SELLING THE UNDERMENTIONED

#### MINING MATERIALS—VIZ.:

1 53-inch cylinder STEAM-ENGINE, 9 feet stroke in cylinder, and 7 feet in shaft. 3 BOILERS, in excellent condition. Capstan, shears, balance and angle bobs, horse-whims, shears and rods. 14 1/2-inch, 8 1/2-inch, 9 1/2-inch, 22 1/2-inch, and 9 1/2-inch pumps. 1 1/2-inch and 1 1/2-inch H-pieces and topdoors. 1 1/2-inch, 1 1/2-inch, 1 1/2-inch, 9 1/2-inch, 1 1/2-inch, and 1 1/2-inch plunger poles, with pole cases, stuffing boxes, and windboxes. All sizes of faggotted and wrought iron strapping plates. Several-deck doorpieces, working barrels, and windboxes. Smith's tools, anvils, bellows, new and useful iron, scrap, wrought, and cast-iron. Staples and glands, screw stocks, plates and taps. Also, the COUNT-HOUSE FURNITURE, together with a large quantity and great variety of other materials in daily use in mines.

The Sale will commence precisely at Ten o'clock a. m.

Wheal Grey is situated within 3 miles of Portleven, 4 miles of St. Michael's Mount, and 5 miles of Hayle.—Dated Marazion, Jan. 30, 1849.

### HIGHLY VALUABLE COAL ESTATE, MANSION, AND LANDS, NEAR WREXHAM, DENBIGHSHIRE.

**MESSRS. CHURTON** will sell, BY AUCTION, on Monday, the 12th day of March, 1849, at Three o'clock in the afternoon, at the ROYAL HOTEL, in CHESTER, subject to conditions of sale, to be then produced, all that highly valuable ESTATE, with the MANSION, FARM BUILDINGS, GARDENS, and PLEASURE GROUNDS, called

#### "BRYN MALLY"

(three miles from the Wrexham Railway Station), with the COTTAGES and FIELDS belonging thereto, containing about 74 statute acres.

Also, the MINES and SEAMS OF COAL and IRONSTONE underneath the estate, or about 50 acres thereof. Also, the owner's SHARE in the PLANT and LEASES of the BRYN MALLY COLLIERY, to which a branch of the Shrewsbury and Chester Railway is brought to the pit's mouth, and is in full operation, connecting it with Chester, Birkenhead, Shrewsbury, and the principal towns in Lancashire, Cheshire, and Wales.

A plan of the estate, and section of the coal seams, may be seen, and tickets to view obtained, on application to Mr. Richard Blundell, attorney, 6, Cook-street, Liverpool.

### GLoucestershire.—TO CAPITALISTS DESIROUS OF SAFE AND PROFITABLE INVESTMENT.

THREE of the most extensive, valuable, and best situated COLLIERIES in her Majesty's FOREST OF DEAN.

About 800 acres in extent, which are computed to contain six millions seven hundred and twenty-one thousand tons of coal, of the best quality.

FOR PEREMPTORY SALE, BY AUCTION, by Messrs. GRAHAM (by order of the Mortgagee), at the DELL HOTEL, GLOUCESTER, on Saturday, the 10th day of March, 1849, at Three o'clock in the afternoon, subject to conditions of sale, all those

#### HIGHLY IMPORTANT COLLIERIES, OR COAL-FIELDS.

Known as the NEW ROAD LEVEL, the FAVOURITE, and BRITANNIA COLLIERIES.

#### LOT I.—THE FAVOURITE AND BRITANNIA.

The FAVOURITE is galed to the Colford High Delf Vein of Coal, and all the other veins between it and the Churchyard High Delf Vein. The BRITANNIA is also galed to the Colford High Delf Vein of Coal, and all the other veins pertaining thereto. These two collieries contain about 600 acres of coal, and adjoin each other in the whole line of the Forest, being free from sulphur, and the formation of the vein is such that having a plain rock top) as to render it workable with little expense and with less than the usual labour or difficulty. This lot will be sold, subject to an agreement, bearing date the 3d of March, 1846, to let the said colliery to Messrs. Robert and David Mushet, for 14 years, at £225 per year, and 1s. per ton for every ton of coal raised by them over and above 15 tons per day. There will be three years' rent, or £675, due at the time of this sale, which the purchaser will be entitled to receive, likewise the rent in future, until the expiration of the term in 1860. This agreement is proved to be good. The parties have worked the colliery agreeable thereto, and are amply responsible.

Capitalists having any intention to attend this sale, may rest assured there will be NO POSTPONEMENT.

These particulars and conditions of sale may be had at the principal inns in the adjacent towns; the place of sale; of T. Gratwick, Esq., banker, Monmouth (the mortgagee); the auctioneers, Ragland and Newport; and for a view of the Map of the Forest and the plan of the collieries, apply to John Atkinson, Esq., Colford, H.M.'s Deputy Gavelor for the Forest of Dean; or to the proprietor, Mr. William Court, Monmouth.

### STEAM-ENGINES.—From 8 to 20-horse power ENGINES ALWAYS IN STOCK.

Apply to Mr. CAPPER, Engine-Maker and Founder, BIRMINGHAM.

Price—£12 to £16; with boiler, £22 per horse.

### TO ENGINEERS, MACHINE-MAKERS, FOUNDERS, STEAM-SHIP AND LOCOMOTIVE BUILDERS, CHAIN AND ANCHOR SMITHS, ROPE AND SAIL-MAKERS, BLACKSMITHS, AND OTHERS.

**TO BE SOLD, with the GOOD-WILL of the CONCERN.** In consequence of the dissolution of the partnership, PREMISES, MACHINERY, and TOOLS.—There will be exposed FOR SALE, BY PUBLIC ROUP, within the LEMON TREE TAVERN, ABERDEEN, on Friday, the 9th day of March next, at Two o'clock afternoon, those extensive PREMISES at FOOTDEE, ABERDEEN, known as the

#### YORK-PLACE IRON-WORKS.

belonging to Messrs. William Simpson and Co., together with the whole MACHINERY and TOOLS contained therein.

These WORKS contain turning, fitting-up, and finishing shops; millwright and pattern shops; large iron foundry; boiler shop; brass foundry; forging and blacksmiths' shops; iron store, warehouses, and counting house. The whole of the buildings are of the most substantial, commodious, and suitable description, for the various trades carried on within them, and are in excellent order, having been erected only 10 years ago, at a large expense. The feu-duty is moderate; and, from the works being within 100 yards of the harbour, the situation is most advantageous.

No expense was spared in the procuring of the TOOLS and MACHINERY. They are of the fullest and most modern description, and in excellent working order, and are capable of turning out every kind of iron-work—including the largest size of marine and land engines, locomotive engines, railway furnishings, and general machinery, and blacksmith work. There is a large and most valuable assortment of patterns, of all descriptions, which will be given over with the works as part of the plant.

There is a fixed CONDENSING ENGINE, of 35-horse power, with two boilers, and an ample supply of water within the premises, with all the requisite GEARING and SHAPING for driving the machinery and tools.

There is also, in separate premises, a HIGH-PRESSURE STEAM-ENGINE, of 6-horse power, with all the TOOLS, HEATING STOVES, and UTENSILS, suitable for the building of the largest class of iron vessels.

In, in separate premises, the FORGES and UTENSILS used by William Simpson and Co., in the manufacture of anchors and chains, with powerful HYDRAULIC TESTING MACHINE, for chain cables.

There will be sold, at the same time, all the HOUSES, BUILDINGS, and MACHINERY for rope-making, and the REMAINDER of the LEASE, held from the town of Aberdeen, of those well-known ROPE and SAIL-WORKS, at Footdee, so long in the occupation of Messrs. Catto, Thomson, and Co. The machinery, utensils, and premises, are capable of turning out a large quantity of cordage, of all sizes; and the accommodation for sail-making is of an extensive description.

Also the ENCLOSED GROUND in York-street, with the BUILDINGS thereon, being part of that freed by Catto, Thomson, and Co., from the town of Aberdeen, in front of their works, and presently in the occupation of William Simpson and Co., measuring about 227 ft. in front, and subject to a feu duty of 5s. 10d. per foot. Also, those two large DWELLING-HOUSES in York-street, erected by Catto, Thomson, and Co., in 1839, adjoining their works, with the large BLOCKMAKING and other SHOPS, all fully let, and renting about 1100l. per annum. The feu duty is 25s. 1s. 6d. yearly.

There will be sold, at the same time, the whole TOOLS used in the block, pump, and mast-making business, carried on by Messrs. Catto and Co., in York-street.

In the meantime, the whole of the above works are continued in operation, and purchasers will have the advantage of a long established connection.

The stock of iron, hump, and other stores, belonging to the different works, will, if desired, be sold to a purchaser at a valuation.

Inventories of the whole tools, utensils, and patterns, with plans of the works, may be seen, and all further particulars learned, on application to Catto, Thomson, and Co., Footdee, Aberdeen.—Feb. 5th, 1849.

### TO BE SOLD, THE VICTORIA IRON-WORKS, near NEWPORT, MONMOUTHSHIRE.

These works are situated on the Monmouthshire Canal Company's tramroad, about 20 miles from Newport, immediately adjoining the celebrated iron-works of the Ebbw Vale Company, whose business is well known and highly prized in all the markets of the world. The minerals of this property are identical with those of the Ebbw Vale Works.

The WORKS comprise four large blast-furnaces, with foundations cut, and blast-pipes laid, for four more such furnaces; a powerful blast-engine, capable of raising 2000 cubic feet of air per minute; an air receiver, 24 feet diameter; four iron steam-boilers, each 36 ft. in length and 8 ft. diameter; a large casting house for the four blast-furnaces; four bridge lofts, or filling houses, with extensive kilns adjoining for roasting the ironstone; three tubs for refining iron, capable of raising 350 tons of iron in the week; a water balance, for raising limestone to the blast-furnace; a bar-iron forge, with squeezer and ten puddling furnaces; a rolling mill with eight baling-furnaces, adapted for rolling rails and all sizes of merchant iron, worked by an engine of about 90-horse power, and capable of turning out annually 10,000 tons of finished bars; a foundry, comprising air-furnace and cupola, water-wheel for blowing cupola, turning the bar-iron rollers, and for turning and boring in general; smith's shop, carpenter's pattern room, and other shops, including machine, brass foundry, and iron yard, with two kilns and drying stores, several reservoirs for water, and other conveniences. Seven pits have been sunk on the property; and through them all the different veins of coal and ironstone known in the district have been opened. The old coal is here 6 ft. in thickness, produces about 6000 tons an acre, and is the cheapest and most valuable in South Wales for smelting purposes. Here also a new vein of ironstone, called "Gough's vein," very rich and abundant, has been discovered, and is expected to prove of inestimable value. There are various houses on the property, which, exclusive of two residences for the principal manager and for the furnace manager, with the shop, produce a rental equal to 3167l. per annum.

The whole of the above works have been constructed within the last few years, at an expense of nearly 200,000l.; they are now for sale under circumstances which will be satisfactorily explained. The land on which the works have been erected is held on lease for 99 years from the 1st day of June, 1845, at a standing rent of 3000l. a year, with the power of getting the minerals under upwards of 1600 acres of land, at a leasehold rent of 6d. for every 2500 lbs. weight of ironstone and coal used in the works, and 3d. additional for every like quantity of coal sold or exported. If the royalties shall not amount to 13500l. a year, inclusive of the surface rent, the last-named annual sum is to be made good to the lessor.

Should the iron trade ever arrive at so depressed a state as to make it desirable to get rid of the lease, the lessees have power to determine it any time, on giving three years' notice, and leaving on the land, for the benefit of the lessor, plant to the value of 10,000l.; the rental of the houses and profits from the sale of coal alone would far more than pay the minimum rent during the currency of the notice. Facilities will be given for payment of the purchase money by reasonable instalments.

For further particulars apply to Mr. John Fraser, Newport, Monmouthshire, or to Messrs. Tilson, Squance, Clarke, and Morice, 25, Coleman-street, London.

### VALUABLE SLATE QUARRY, in CARNARVONSHIRE.

TO BE LET, for such term, and on such conditions, as may be agreed upon, the RIGHT WORKING a valuable ROCK OF SLATE, on the SLAENY-CWM-FRIDD, in the parish of PENMAENH, upon which a large sum of money has been expended in driving a level, and in other works. The metal of this rock has been proved to be equal to that of the finest Festiniog Quarries, which lie in the vicinity. The undertaking would suit a joint-stock company or a private speculator, as it can now be brought into early and extensive work, at a comparatively small outlay.

For particulars apply to Francis Hallows, Esq., National Provincial Bank, Dalgely; and to view the quarries, to Mr. Humphrey Williams, Blaen-y-cwm Farm, Penmaen.

### JAMES BOYDELL, LAND, MINE, AND MACHINERY

VALUER AND AGENT, 54, THREADENEEDLE-STREET, LONDON.

Has to DISPOSE OF a large quantity of STEEL and MANUFACTURED HARDWARE, now warehoused in London.

Several valuable PATENT RIGHTS, some of which have been profitably worked.

A FREESTONE QUARRY, in North Wales, from which, on account of its quality, the small cost of getting and working it, and its proximity to the sea, London may be supplied at lower prices than those now ruling for much inferior stone, and a large profit left to the proprietor.

An IRONSTONE MINE, likewise in North Wales, worked open cast, close to a shipping port, and now in profitable work.

The LEASE of a very celebrated FOUNDRY and ENGINEERING ESTABLISHMENT, on the River Dee, complete, with fixtures, machinery and tools, in working order, and ready for any parties to embark at once on building first-class iron steam-vessels, and marine and locomotive engines.

The above will be found worthy the attention of any parties desiring to invest money in a profitable business, as they will be disposed of upon terms which will ensure an unusual return to the purchasers of them.

J. BOYDELL has also at his DISPOSAL a RESIDENCE and LANDED PROPERTY in SHROPSHIRE, which is in a good neighbourhood, and which (a large portion of the land adjoining the house being of a most picturesque character, and well timbered, with a streamlet running through it) might be made a country residence for any nobleman or gentleman, such as but few in the kingdom would bear comparison with.

Particulars of the above may be had, upon application, at 54, Threadneedle-street.

### LAND AND MINERAL SURVEYING, PONTYPRIDD, GLAMORGANSHIRE.—W. T. LEWIS

begs most respectfully to inform LAND owners, Coal Proprietors, and other gentlemen, that he has just COMMENCED BUSINESS in the ABOVE LINE, at this place, and hopes that, by strict attention and adherence to integrity, he may be honoured with their support.

Every department of SURVEYING executed with fidelity, accuracy, and dispatch.

MID-street, Pontypridd, Feb. 14, 1849.

### TO ENGINEERS AND BOILER MAKERS.—THE BIRMINGHAM PATENT IRON TUBE COMPANY

MANUFACTURE PATENT LAP-WELDED IRON TUBES (under Mr. R. Prosser's Patent) for Marine, Locomotive, and all Tubular Boilers. Also, TUBES for Gas, Steam, and other purposes. All sorts of IRON GAS FITTINGS.

WORKS—Smeethwick, near Birmingham.

LONDON WAREHOUSE—No. 6, Upper Thames-street.

**WANTED, —REFINER, OR SMELTER, OF COPPER** and SILVER-LEAD ORES.—The ADVERTISER is desirous of a SITUATION, either at home or abroad. He has had considerable experience in the above capacities, and acquired his knowledge of smelting those ores in Germany, according to the German method; he has also had great success in the conversion of slag and antimonial lead into soft lead (with a perfect knowledge of book-keeping). The highest testimonials as to character and ability will be given.—Address by letter (on foreign paper, post-paid), to "J. G.," Post-office, Little Sussex-place, Hyde-park Gardens.

**TO MERCHANTS AND OTHERS.**—The ADVERTISER, who has been for a number of years CONFIDENTIAL and MANAGING CLERK in a merchant's office, where the accounts were kept by "double entry," is desirous of obtaining SIMILAR EMPLOYMENT, either at home or abroad. He is also practically acquainted with the mode of working Cornish mines, and the manner of keeping mine accounts. References unexceptionable.—Address "S. C. B.," care of the Editor of the Mining Journal, 26, Fleet-street, London.

**TO CHEMICAL WORKS, AGENTS, &c.**—The PROPRIETORS of a CHEMICAL WORKS in Glamorganshire are IN WANT of a COMPETENT MANAGER, well acquainted with the manufacture of all sorts of chemicals, charcoal, &c.—Address to "S. L.," Post-office, Swansea.—February 9.

**WANTED, —A CONDENSING ENGINE, of from 30 to 40-horse power, either NEW or SECOND HAND, suitable for pumping water.** One on the Cornish plan would be preferred.—For particulars apply to J. C. Birkinshaw, Esq., engineer, York.

**SECOND-HAND ENGINE WANTED.—WANTED** IMMEDIATELY, a SECOND-HAND STEAM-ENGINE, of 8 or 10-horse power, with tubular boiler, and to stand upon a wooden frame.—Apply to the Black Craig Mining Company, near Newton Stewart, Scotland; or to Mr. William Muschamp, Derwent Lodge, Sunderland.

**PUMP TO BE SOLD.**—A PUMP, in first-rate condition, 12-inch in the bore, 4 feet stroke, with buckets, connecting-rods, slides, and bell crank, complete. Lowest price £20.—Apply to F. Wignin & Co., Stroud, Gloucestershire.

**FOR SALE, a 6-horse power TABLE STEAM-ENGINE,** nearly new, with the entire fittings, complete.—Price, £75. Apply to Mr. C. S. Richardson, C.E., 5, Whitefriars-street, London.

**FOR SALE, a SECOND-HAND 60-horse HIGH-PRESSURE PUMPING ENGINE, 30-inch cylinder, 7-ft. stroke, with two large boilers, in excellent condition.** Also, a 10-horse ATMOSPHERIC DRAWING-ENGINE, with boiler, cog-wheels, and drum—the cylinder constructed so as to be easily altered into a 20-horse condensing engine. Also, a LOT of 15-inch PUMPS. Apply to Mr. William Clark, Holmes Colliery, Rotherham, Yorkshire.

**TO BE SOLD, a PUMPING-ENGINE, 30-inch cylinder, 9 ft. stroke, built by Mr. West, engineer, nearly new—only been worked about three years—no engine ever done better duty when at work; together with a SEVEN-TON BOILER, SPRING BEAM, and first set of rod-shaft attached, for £400.** The engine is within a few miles of a good shipping port, being near Liskeard—one good road.—For particulars apply to Capt. Osburn, Liskeard; or Mr. Wm. Rendle, Octagon, Plymouth.

**TO COLLIERY OWNERS, CONTRACTORS, QUARRYMEN, AND OTHERS.**—FOR SALE, a QUANTITY of SECOND-HAND EARTH WAGGON AXLES, FLAT PITS, TRAVELLING and STATIONARY CRANES, IRON and WOODEN SHEAR BLOCKS, CHAIN, PICKS, PINCH BARS, HAMMERS, and WEDGES—all in excellent repair, and at extremely moderate prices, delivered. Apply to Messrs. John Stephenson and Co., Railway Contractors' Office, Perth. Perth, Jan. 31, 1849.

**GROWA SLATE COMPANY.**—PERSONS desirous of becoming AGENTS for this COMPANY in the different TOWNS and SEAPORTS, are requested to apply by letter, addressed to the purser, at the office, 57, Threadneedle-street, London, where prospectuses and every information may be obtained.

**EAST BIRCH TOR TIN MINE.**—APPLICATIONS for the FEW SHARES in this COMPANY remaining unappropriated, to be made to the secretary, 2, Winchester-buildings.

**RUNNAFORD COOMBE MINE.**—An excellent opportunity is now OFFERED to any person wishing to PURCHASE SHARES in the above valuable concern.—MR. BROUGHTON has FOR SALE a FEW SHARES, very cheap. Apply to Mr. Broughton, 30, Taylor's-buildings, Woolwich.

**TALARGOCH LEAD MINES.—TO BE SOLD, BY PRIVATE TREATY, a NUMBER of SHARES** in the celebrated TALARGOCH LEAD MINES, which have been in operation many years, and yielding several thousand tons of lead ore per annum. The above mines are replete with every requisite for carrying on much more extensive works; to effect which, an outlay in machinery, engines, pumps, &c., to the amount of upwards of £30,000 has recently been made. Applications, addressed to Mr. J. Jones, underground agent, Talargoch, near Rhyll, Flintshire, will meet with immediate attention.

**MINING PROPERTY.**—MR. JAMES HERRON, MINE AGENT, 33, CLEMENTS-LANE, LOMBARD-STREET, has received instructions to DISPOSE of SHARES in FIRST CLASS MINES, paying regular dividends, and yielding to the purchaser from 17 1/2 to 35 per cent. upon his outlay. He is also in a position to transact business in the following—viz.: St. John del Rey, Tamar, Trevelick and Barrier, Great Devon Consols, Altan, Australian, Condarrow, East Wheal Rose, and Wheal Seton Mines.

**MINING OFFICES, THREE KING'S COURT, LOMBARD STREET, LONDON.**—Messrs R. TREDINICK & CO. beg to draw the attention of capitalists to the DEPRESSED MARKET VALUE of SHARES in ENGLISH and FOREIGN MINES, many of which pay dividends of from 30 to 35 per cent. per annum, whilst those on the eve of so doing are selling at correspondingly low prices.—Messrs. T. & Co. continue to DEAL in every description of MINING, RAILWAY, BANKING, INSURANCE, CANAL, and OTHER SHARES.—Statistical information afforded gratuitously, upon personal application.—MONEY ADVANCED upon the above securities.

**MINING OFFICES, No. 8, GEORGE-YARD, LOMBARD-STREET, LONDON.**—MR. RICHARD THOMAS (who has had 20 years' experience as a mining agent in London) OFFERS his SERVICES in the PURCHASE and SALE of MINE and OTHER SHARES, on commission. Purchases in many valuable mines may now be made at unprecedentedly low prices. The fullest information given (without charge) relative to mining investments and operations.

N.B.—R. T. has now ON SALE a limited number of SHARES in an undertaking offering unusual advantages, situated in one of the best mining districts in Cornwall. Full particulars will be furnished on application.

**MR. THOS. P. THOMAS, MINING AGENT, AND DEALER** in RAILWAY, GAS, BANK, INSURANCE, AND OTHER SHARES.

8, GEORGE-YARD, LOMBARD-STREET, LONDON.

T. P. THOMAS is a SELLER of SHARES in the leading MINES of Cornwall, Devon, and Wales—paying from 10 to 30 per cent.—Statistical information afforded upon personal application, or by letter.

**MR. GEORGE BATE, JUN., CIVIL ENGINEER AND SURVEYOR, WOLVERHAMPTON.**

N.B.—UNDERGROUND MINING SURVEYS accurately executed.

**JAMES LANE, MINING SHARE DEALER,**

80, OLD BROAD-STREET, LONDON.

**MONEY.—MESSRS. KILLICK & CO. (late WINSTANLEY, KILLICK, & Co.), SHAREBROKERS,** inform their friends and the public, they make IMMEDIATE ADVANCES, to any amount, on the deposit of English and Foreign Railway Shares, Scrip, and Debentures, upon exceedingly advantageous terms; they also BUY and SELL every description of STOCK and MINING SHARES, at much less commission than usually charged.—6, Bank Chambers, opposite Bank of England.

**ASTURIAN MINING COMPANY.**—Notice is hereby given, that all SHARES in ARREAR of the CALL, due on the 21st day of November last, will be ABSOLUTELY FORFEITED, unless PAID upon, with interest, on or before the 22nd day of FEBRUARY inst. By order of the board, Offices of the company, 9, Austin-friars, Feb. 9, 1849. K. MACKENZIE, Sec.

**BANWEN IRON COMPANY.**—Notice is hereby given, that the next HALF-YEARLY ORDINARY GENERAL MEETING of the shareholders of this company will be held at their offices, 23, Threadneedle-street, London, on Monday, February 26, instant, at Two o'clock precisely. By order, S. F. HARRIS, Secretary.

**REAL DEL MONTE MINING COMPANY.**—Notice is hereby given, that a MEETING of PERSONS INTERESTED in PURCHASING and CARRYING ON the MINING WORKS at REAL DEL MONTE, will be held at the George and Vulture Tavern, George-yard, Lombard-street, on Tuesday, the 27th of February inst., at Two o'clock precisely, for the purpose of hearing a report on the actual state of the property, and of considering the expediency of forming a new company.



## Law Intelligence.

## HARDY'S AXLETREES FOR RAILWAY-CARRIAGES—EXTENSION OF PATENT.

JUDICIAL COMMITTEE OF THE PRIVY COUNCIL—FEB. 12.

Mr. HILL, on behalf of the patentee, James Hardy, and of his assignees, Messrs. Charles Geach and Thomas Walker, applied to their Lordships for an extension of the patent for a term of seven years. In the year 1835, Mr. Hardy obtained a patent for certain improvements in the making of axletrees for railway carriages. At first he attempted to work the patent himself; but the result was, that he lost the whole of his fortune, and had since entered the church, in which he had a cure worth about 1000 a year. For several years he was encumbered with a number of partners, and his attempts to pay them off sunk him into deeper difficulties, until he finally made over to Messrs. Geach and Walker his interest in the invention, in 1844; and since then he had no connection with it, and derived no profit from it. The specification attached to the patent declared that the improvements in the making of axletrees consisted in giving to bars of iron, in a heated state, peculiar shapes, by means of rolling, in order that a series of such bars, when combined in close lateral contact, should form a cylindrical figure; second, in combining them in a way similar to that technically called flangeing, a series of such peculiarly shaped bars, as segmental portions of a cylinder; and, after heating such combined series of bars in a furnace to the proper welding heat, passing them between rollers, for the purpose of bringing the particles of metal into a state of perfect cohesion; third, in working such combined bars between cylindrical dies, under a tilt-hammer or metal bevil, for the purpose of condensing or hardening the metal, and giving it the required form. By means of these improvements the qualities requisite in shafts, of stiffness, tenacity, and strength, or capacity of resisting strain, tension, and pressure equally on all sides, were obtained in a remarkable degree. The mode of making axes before this invention was by piling bars of iron together, welding them under a hammer into a square figure, and afterwards reducing and rounding the angles—a process which gave no security against imperfect union or faulty places in various parts of the mass, and axes so made frequently broke suddenly, from some imperfection of the welding in the interior, of which no trace could be discovered on the surface. Mr. Hardy, in order to obtain the accurate arrangement of the dies, correct and uniform texture of each piece adopted, as the basis of his invention, the combination of a number of segmental bars, arranged on a central rod, the whole of which being brought to a welding heat, and subjected to the pressure of rollers, the radial sides of the segmental pieces were brought into cohesion and union at the same heating. In the year 1847, an accident occurred on the Great Western Railway, which put to a severe test the capability of this axletree to resist strain and pressure. A truck, improperly left on the line of railway, was run into by an express train, weighing 100 tons, and going at the rate of 60 miles an hour, and the result was, that the patent axle with which it was furnished was very much bent, but there was neither crack nor flaw visible on the exterior, the only injury received by it being its change of form by being bent. The learned gentleman then went into a lengthy statement of the accounts of the patentee and the present proprietors, with the view of showing that the extension claimed should be allowed. Up to 1838 there had been a loss of 3000l.; up to 1844, a further loss of 2780l.; in 1845, a profit of 4111l. was realised; in 1846, 8861l.; in 1847, 12,629l.; and for the half-year of 1848, 2585l. From these amounts was paid the depreciation of the plant and stock, which was very considerable. In point of fact, the plant which cost 28,000l. if sold at present would not produce more than 12,000l., provided the extension of this patent was refused, and the making of these axes thereby thrown open to public competition. An agreement had been entered into by Messrs. Geach and Walker, by which they bound themselves to give Mr. Hardy a sum of 5000l. a year, for seven years, provided they obtained an extension of the patent for that period.

Several witnesses were then called, who proved the superiority of this axle over all others, for railway purposes, and the process through which it went rendering it almost all through, while the iron in the old axle was frequently found crystallised in the centre. It was also shown that the new axle could be manufactured and sold at a cheaper rate than the old one; that the demand had increased very much since 1847; that, consequently, the profits were, and would be, smaller, and that the depreciation of plant would amount to 16,000l., if the concern where they were made were to be sold immediately. On the whole, counsel submitted to their Lordships that the present holders were entitled to an extension of the patent, which would give them further remuneration for the outlay they had incurred.

A consultation having taken place between the members of the council, Lord BACON said, that the Court, having maturely considered the merits of the case, were of opinion that an extension of the patent should be granted. The assignees must, however, execute an instrument stipulating the price of the patented articles during the extension of the patent, and give one moiety, or half of the profits arising therefrom, to the patentee, for the very great and deplorable loss he had sustained in the prosecution of the patent. His Lordship, after briefly enunciating the great value of the invention, and the fact, that, providing these conditions were complied with, the Court would grant an extension of the patent for four years, and in order to give time for the preparation of the document, postponed the final decision of the case until Thursday.

In the House of Lords, Lord BACON read occasion to advert to the subject, and made the following important allusion to the invention: he said—"He availed himself of the opportunity to give railway directors generally a hint, to which it would be highly for their interest to attend. In the Court of Privy Council, a case had been decided that day, in which the great superiority of Hardy's patent axle for railway carriages, over all others, had been indisputably demonstrated. Nothing could be more satisfactory than the success of the experiments which had been made before the Privy Council. An unusually great weight was placed on the axle, and a shock of the most startling magnitude was given to the carriage. That patent axle was bent into a completely circular shape, without a single fracture being visible in it; indeed, it was as good an axle, in point of solidity, after the accident as before it. Out of 50 other common axes which were submitted to the same shock, only two were able to stand it. He complained that the directors of railways did not substitute these patent axes, which were 30 per cent. cheaper than the common axes, for those axes, until they were either broken up or worn out. He took this opportunity of letting this fact be known to the directors; for, if death should ensue hereafter from the breaking of an axle, he knew well what the verdict of a jury would be."

## RIGHTS OF OWNERS OF COLLIERIES.

COURT OF COMMON PLEAS—FEB. 15.

SIR J. K. B. KIRK—The Court, in delivering judgment, said this was an action on the case tried at the Spring Assizes, at Chester, when a verdict passed for the plaintiff, subject to a special case. The declaration in substance alleged that plaintiff was possessed of a colliery, called Plas Bennion, in the county of Denbigh, and that one Jones was formerly possessed of the adjacent colliery, called Avon Either Colliery, when Jones, in extracting coal, made large holes in a vertical seam of coal, which acted as a barrier between the two mines; that the defendant succeeded Jones in the possession of the Avon Either Colliery, and that by reason of Jones's acts, the plaintiff's mine became liable to be inundated with water, from the mine of the defendant; that the defendant, by reason of his possession of the neighbouring mine, was bound to prevent the water from flowing into the plaintiff's mine; and the declaration then charged him with wrongfully omitting to do so, whereby the plaintiff sustained damage. The defendant denied the obligation charged. It appeared the plaintiff had been in possession of Plas Bennion many years, and the defendant of Avon Either since 1844. The latter colliery was on a higher level than the former, and in both there were several chambers caused by the removal of large quantities of coal. The boundary between the two collieries was a vertical seam of coal, part of the plaintiff's mine. When the defendant took possession of Avon Either, there were three large holes called "curlings" through the boundary seam of coal, which had been improperly made by Jones. In the defendant's colliery there was a large subterranean body of water on a higher level than the chambers in Plas Bennion. The body of water was fed by natural springs, and was separated from the chambers of Avon Either colliery by a thick horizontal bar of coal, part of that colliery. In 1845 the defendant removed the horizontal bar for the purpose of working his mine in the most advantageous manner. The effect was to send the water from his mine into the plaintiff's colliery through the curlings. The defendant, by reason of his removal of the bar, and the vertical seam of coal would have kept the water from flowing into Plas Bennion. The plaintiff rested his claim to compensation upon two grounds—firstly, on account of Jones's act; and, secondly, on the ground that there was a general liability on defendant to work his colliery as not to injure the property of the plaintiff. With regard to the first, point it was to be observed, the defendant did not derive title through Jones, and no privity was shown to exist between them. There was, therefore, no special duty, in consequence of Jones's acts, devolving upon the defendant as his successor, to prevent water coming into his mine, so as to flow into that of his neighbour. Now, it was not found there was any negligence or malice on the part of the defendant, or that, in working his mine, he had taken an unusual or improper course. A great number of cases had been cited to show he should have taken care to prevent the water from coming out of his own mine; but in all of them some negligence was imputed, which was not the case here. The removing of the horizontal bar of coal in his own mine—the cause of the injury—was an act for which the defendant was not responsible to any one. An act of this kind would have originally been laid against Jones, who made the curlings; but a second action could not have been brought even against him for the consequential damage subsequently accruing—"Clegg v. Dawson" (11 Law Jour., 354). But treating the question as one entirely new—and, in truth, all the cases were distinguishable from the present—the court were prepared to say, the defendant was entitled to work his mine in the most advantageous manner to himself, although attended with injury to another, so long as that injury did not spring from negligence or malice on his part. The principle of the two mines had been almost equally clear. What authority had the plaintiff to abridge the defendant's rights in the working of his mine? The plaintiff seemed to have taken that view himself, for he left a barrier, which was broken through by a wrong-doer, but for whose acts the defendant was not responsible. A lapse of 20 years might, in some cases, give the owner of land a right to enjoy his own land in restriction of the rights of a neighbour upon his land; but no such ground of title was relied upon here. Water was a common enemy against which each man must defend himself. The principle of the civil law, that he who holds land upon a lower level owes a natural servitude to land on a higher level, was recognised as correct in 19 M. & W. 325, and, in the opinion of the Court, was applicable here. The plaintiff was, therefore, not entitled to recover, and the postea must be delivered to the defendant.—Judgment for defendant.

ON THE MANUFACTURE OF THE CELEBRATED DAMASCUS BLADES.—Nicolò Milnesa, for some time consul in the east, in endeavouring to discover the process employed by the Kourdes, in the manufacture of their sword blades, observed—1. That the manufacturers in which these blades were made were situated at the declivity of the mountains, near cascades, the water of which, falling from rock to rock, arrived in the most limpid state in the reservoirs constructed for its reception, in which reservoirs the blades are tempered. These reservoirs are themselves placed in situations where the air is very pure. These conditions of purity of air and water are considered necessary for the success of the operation.—2. Iron of the purest quality is selected. Subjected to a very high temperature, the first tempering is commenced when the iron is at a white heat; the metal is exposed before fusion, the fuel employed being placed on each side of it; the red hot iron is then covered as quickly as possible with fatty and oily matters, paste made from bones, wax, &c. This operation tends, according to the manufacturers, to render the blade flexible. The second tempering is performed by the same process, with this difference, that the heated iron, after having thrown off considerable quantities of sparks, and having been exposed, is covered with a paste composed of powdered bones, and purified nutmeg. The third tempering is effected, by disposing the metal in such a manner, that it may be seized by a man on horseback, who rides at full gallop in order that the blade which he keeps in an elevated position may receive the impression of the air.—3. The fuel employed is anthracite and turf. In order to obtain favourable results, it is necessary to use fuel entirely free from sulphur, and combine as much as possible, the heating of animal, vegetable, and mineral substances.

## Transactions of Scientific Bodies.

## MEETINGS DURING THE ENSUING WEEK.

THIS DAY.	ASIANIC—8, New Burlington-street.	2 P.M.
MONDAY.	Statistical—12, St. James's-square.	2 P.M.
	British Architects—16, Grosvenor-street.	8 P.M.
	Chemical—Society of Arts, Adelphi.	8 P.M.
	Medical—Bolt-court, Fleet-street.	8 P.M.
	Philosophical—21, Regent-street, Waterloo-place.	8 P.M.
TUESDAY.	Linnæan—Soho-square.	3 P.M.
	Horological—41, Tavistock-street, Covent-garden.	3 P.M.
	Civil Engineers—25, Great George-street.	8 P.M.
WEDNESDAY.	Society of Arts—Adelphi.	2 P.M.
	Geological—Somerset-house.	8 P.M.
THURSDAY.	Royal—Somerset-house.	8 P.M.
	Antiquaries—Somerset-house.	8 P.M.
	Royal Society of Literature—St. Martin's-place.	4 P.M.
	Naturalists—41, Tavistock-street, Covent-garden.	7 P.M.
FRIDAY.	Royal Institution—Albemarle-street.	8 P.M.
	Philological—London Library, 12, St. James's-square.	8 P.M.
SATURDAY.	Royal Botanic—Inner Circle, Regent's Park.	3 P.M.
	Westminster Medical—17, Saville-row.	8 P.M.

## On the Coal-field of South Wales.

At the Institution of Civil Engineers, on Tuesday last, Mr. JOSHUA RICHARDSON, M. Inst. C.E., read a paper on this subject: he commenced by enforcing the necessity for an unbounded supply of fuel for the export trade, the manufactures, and the domestic uses of Great Britain, and enumerating various sources from whence that supply was at present, and might be in future, obtained; giving, at the same time, the various and discordant opinions of eminent authorities as to the presumed duration of that supply from the several mineral districts of which the extent was now ascertained. This was variously stated by different authorities at between 200 years and 1700 years; but Mr. Richardson ventured to assert that, in spite of the increasing demand for home consumption, and an augmenting export trade—amounting, at present, to upwards of six millions of tons annually—when the coal-field of South Wales should be brought into full work, the duration of the supply was beyond calculation. The area of this coal-field alone he estimated, from actual survey, to be 1055 square miles, embracing all qualities, from extremely bituminous coal to pure anthracite. The various veins, and their several thicknesses, were fully described, with examples of their quality, and analysis of them chemically, with their practical evaporating powers—showing that there existed 64 seams or veins of coal, having an aggregate thickness of 190 feet. These veins were described to be so situated as to be easily worked by adits or levels, and by pits of slight depth; and thus the cost at the mouth of the levels varied from 2s. 2d. to 3s. 6d. per ton—giving a mean of about 2s. 10d. per ton. The means of transport to the ports of Cardiff, Newport, and Swansea, although at present inefficient, were daily improving, and enabled the coal to be shipped at about the same rates as the coal in the Tyne and the Wear. The actual annual consumption was shown to be—

In the iron-works of South Wales	.....Tons 1,500,000
The copper-works	....." 300,000
The tin-plate and other works	....." 300,000
In agricultural and domestic uses	....." 1,000,000
Exports	....." 1,500,000
Total	.....Tons 4,500,000

The useful and evaporative qualities of the various veins were carefully investigated, and it was shown, in a table of relative evaporative values, that

1 lb. of Welsh coal will evaporate	.....9 lbs. of water.
1 lb. of Newcastle and Yorkshire coal	.....7 1/2 "
1 lb. of Lancashire coal	.....7 "
1 lb. of Scotch coal	.....6 "

And it followed, that if

Welsh coal was worth	.....20s. per ton.
Newcastle and Yorkshire was worth	.....15s. 8d. "
Lancashire	.....15s. 6d. "
Scotch	.....13s. 4d. "

The coals of Staffordshire and Derbyshire were not taken into consideration, because they were used chiefly for the consumption by home manufacturers.—From these, and other statements, and from extracts from Sir Henry de la Beche and Dr. Lyon Playfair's able Report on Steam Coal for the Navy—which a succinct abstract cannot embrace—it was shown, that the Welsh coal excelled all others for steam purposes, and for almost all uses to which it was applied; and that, when all other sources of supply had diminished, or had failed, the prosperity of the manufactures and the commerce of Great Britain might be maintained for ages by the coal-field of South Wales.

A very animated discussion ensued, in which several eminent engineers and chemists reasoned upon the statements in the paper, and the contested questions of the evaporative powers of different fuels.

[The discussion was announced to be continued at the next meeting of Tuesday, 20th February, when "An Account of the Explosion at the Eaglesham Colliery, North," by Mr. Joshua Richardson, would be read.]

## Gold in California, and other Countries.

At the Society of Arts, on Wednesday evening, Mr. TENNANT, F.G.S., read a paper "On the Different Mineral Substances, which may be found with gold in various parts of the world, (including those from California)" but which have hitherto been overlooked." At eight o'clock, Baron GOLDSMID took the chair. The secretary, after reading the minutes of the last meeting, which were confirmed, alluded to the interesting paper which had been read at the last meeting, by Mr. Highton, "On the Electric Telegraph," and advertising to the fact that the Society had been the first to introduce to the notice of the public that valuable material, gutta serena, stated, he believed the time was not far distant when, through its agency, a submarine communication would be established between England and Ireland, as well as France and England; and produced, for the inspection of the members, a combination of six copper wires, separately insulated by a new process, and twisted together into a rope, by which the insulation of each wire is secured, and the whole rendered exceedingly strong and compact, and in this state it would be placed at the bottom of the sea, thus forming a submarine communication. The specimen was sent by Mr. Francis Whishaw.

Mr. TENNANT commenced by observing, that the Californian gold was similar to that found in the Brazils, but lighter in colour; the existence of gold in that country had been known for centuries, the first discoverer of it having been Sir Francis Drake; various substances had likewise been found there, such as mica (which might be seen in the granite in the streets), copper, and iron pyrites, much resembling gold in colour; the disappointment consequent on the discovery of this, had, probably, disgusted the first adventurers, who had abandoned it without further attempts to prosecute and explore the sources from whence it was derived—that, probably the gold had been lying there for ages. Such may occur in any new country—for instance, Australia, Borneo, or India. Gold was first discovered in the Brazils in the beds of rivers, by washing the alluvial soil; he had himself seen particles of gold in the Grampian Hills, but he doubted much whether it would pay the expense of working—they might get 1l. but it would cost 2l. 10s. Gold was likewise found in Wales in sulphurets of zinc, and in Cornwall among tin. Mr. Tennant here exhibited several specimens of gold, these consisted of—1. Foliated gold with quartz, from Mexico.—2. Crystallised gold.—3. A round pebble, weighing 9 ozs. 14 dwts., containing over 6 ozs. of gold; both these, from Brazil, had formed part of the Stowe collection.—4. Gold from Cornwall.—5. Gold in sulphurets of zinc, from the Hwynyswn mine, in Merionethshire, besides several specimens of granular gold from the west coast of South America, Africa, and California. According to assay, furnished by Mr. Tennant, the gold of California, of 100 parts, was composed of—gold, 88.75; silver, 8.88; copper, 0.85; siliceous residue, 1.40—99.88.

In Brazil, according to Mr. Tennant, eight men had, in four hours, obtained 203 ounces of gold from a portion of soil not two tons weight, taken from a deep hole at the bottom of the river. He should not be surprised to hear that diamonds, rubies, emeralds, sapphires, and other precious stones, were to be found intermixed with the gold; and to this, should there be any adventurous parties at present in the Institution, who thought of going to California, he wished particularly to draw their attention, that while they were seeking for gold, probably more valuable substances might be overlooked. The average value of gold was about 3l. 15s. per ounce, that of diamonds in their rough state was about 50l.; while, if free from defects, flaws, &c., they were of greater value. He had, therefore, taken Jeffrey's estimated value of pure diamonds, and this was generally considered the best. Diamonds were in general weighed by the carat, which was a term

well known to jewellers, and equivalent to 4-grs. Thus a diamond of—

1 carat was worth	.....£ 8	10 carats was worth	.....£ 800
2 " "	....." 16	20 " "	....." 3,200
3 " "	....." 24	30 " "	....." 4,800
4 " "	....." 32	40 " "	....." 6,400
5 " "	....." 40	50 " "	....." 8,000
6 " "	....." 48	60 " "	....." 9,600
7 " "	....." 56	70 " "	....." 11,200
8 " "	....." 64	80 " "	....." 12,800
9 " "	....." 72	90 " "	....." 14,400
10 " "	....." 80	100 " "	....." 16,000

From this it would be seen that, according to the weight, the value of the diamonds was enhanced most materially—so that the heavier they became they received a considerable increase, and apparently most disproportionate ratio, of value. The largest diamonds were at such an enormous cost, that it was impossible for private individuals to purchase, no one being sufficiently wealthy to lay out their capital on precious stones of such a price. The finest private collection of diamonds he believed to be in the Bank of England, being the property of the late Mr. Philip Henry Hope; there had been several lawsuits with regard to the heirship of these jewels, and the suit was yet pending in the courts. To those who were admirers of diamonds, he would recommend a visit to the Tower, to see the Crown jewels deposited there, and fine specimens might daily be seen in the jewellers' shop windows in London. It might be said that it was extremely difficult to detect the diamond in its true face; but Nature had ordained that, in all inorganic substances, there should be some distinguishing mark, such as crystalline form, specific gravity, hardness, fracture. Mawe, in his account of the Brazils, says, when they were first discovered, so little was their value known, that they were used as counters. Quartz, which is a very hard substance, differs from true diamonds, inasmuch as it always breaks with a curved fracture, generally termed by mineralogists conchoidal, or like a shell. Topaz occurs in a rhombic prism when perfect; if the edges are destroyed by the friction of a long transport from the mountains where they are discovered, or any other cause, it breaks with a smooth fracture at right angles with the axis of the prism, as if polished by a lapidary. On the contrary, the diamond breaks in four directions; which will yield an octahedron. The usual crystalline form of the diamonds are cubes, octahedrons, and dodecahedrons, occasionally with spheroidal faces, they are never found in rhombic or six-sided prisms, and this is a sure guide to detect them from the others, when found crystallised. In the collection he had purchased at Stowe, his friend, Mr. Hertz, had inspected a pebble with a diamond on it; he (Mr. H.) imagined that the diamond had been fastened on there by gum, or some other resinous matter; on applying boiling water, it was found not to loosen, but, by washing the soil away, it was found half as large again; in addition to this two others were discovered, besides a large quantity of gold. This might be the case in California; he was no advocate for going there, but he thought it not at all improbable that different precious stones might be discovered there.

But, returning to the gold, he would tell them a few simple tests to detect an adulteration of the precious metal. They had heard brass filings had been exported there to mix with the gold-dust; this was much lighter than gold. The specific gravity of gold had been tried by four different trials. The following had been the result:—15, 15.6, 16.4, 17; so that, as a mean, the specific gravity of gold was 16 times greater than water; while that of copper pyrites was 4.5; iron pyrites, 4.3; mica, 3. The blow-pipe was, likewise, a most useful and simple instrument; this can be used with a penny candle and a halfpenny worth of charcoal—so that, for 8d. or 10d., a primitive furnace to commence operations with, can be purchased.

Gold may be cut with a knife like lead, and bent and beat out in thin leaves. Iron pyrites cannot be cut, or even scratched, with a knife. Copper pyrites is brittle. Mica, foliated and elastic. The blow-pipe applied to gold, it retains its colour; while copper and iron pyrites lose theirs, and the latter becomes magnetic. Gold is also not acted upon by nitric, muriatic, or sulphuric acid singly; when the two former are combined, it is only then soluble. If any of the other three minerals were reduced to powder, either of these acids will readily act on them. These were simple tests, and which any one, without the slightest knowledge of mineralogy, could avail himself of. He had seen a recent work called *Jackson on Minerals*, which he wished to allude to, on account of the erroneous statement contained in it, with regard to diamonds. He should not have adverted to this; but such errors in general, when they appear in print, if not corrected, go down to posterity. He says—"Draw a fine file over the stone; if it does not scratch, it is a good diamond." This was not the fact; a fine file drawn over it might cause serious injury to the stone, by detaching some of the facets in the direction of the cleavage planes. He then states, if very minute, place it between two half-crowns; then place it between the finger and the thumb; if a diamond it stands—this was perfectly useless. Another author said, that a good diamond, placed on an anvil, will remain perfectly whole when struck; but an indentation will be seen in both the hammer and anvil. For his own part, he should not like to have any diamond of his subjected to such a test. The diamond is very brittle; and a valuable diamond could be broken easier than quartz.

Dr. MANTELL required of Mr. Tennant some further explanation of the formation of gold and of the diamond.—Mr. TENNANT said, that gold was found in quartzose veins. The rock was argillaceous schist, which readily decomposes. That no doubt electricity had been a work. It was impossible to say how Nature was working in her large laboratory. The lighter particles were washed out, and the great body of the gold remained behind. So much had already been written in the newspapers about the formation of gold, that he considered it unnecessary for him to further allude to it. With regard to the diamond, a distinguished chemist had devoted several months to its study, and was about to publish on its properties, which, coming from so eminent a man, he had no doubt would throw a great light on the subject—the gentleman he alluded to was Mr. Faraday.—Mr. TENNANT concluded his paper amid the prolonged cheers of his audience.

Dr. MANTELL observed that, according to Sir Roderick Murchison's work, gold had been discovered in diluvial deposits in Siberia; and these were generally the richest. His opinion was, that the Ural Mountains had risen in that convulsion; and that he believed large deposits of gold existed in the rocks, and had been there for ages, at the same period when those large animals, now extinct, and which they knew had existed there from their carcasses having been found imbedded in ice. If he went to California, he should seek the place where the largest pieces were to be found; and, by tracing that, endeavour to come to the fountain head. The diamond had been considered to be a crystallised gum, or resin, from a plant. It was known to be pure carbon; and, when consumed, the residue was like charcoal from a piece of wood. Sir Isaac Newton was of the same opinion of the gem—the refraction of the light being the same as on opal and amber, which were both substances of a vegetable nature.

After a few observations from Mr. PERCIVAL JOHNSON, who stated, that as they got deeper in the mines the gold diminished, Baron GOLDSMID apologised for addressing the society, and stated, that his only motive in doing so was, to caution those young people who might not only be risking their fortunes, but their lives, by going to California. When the gold mines were first started here, a company, with which he was connected, had raised 1,000,000l. to trace the gold veins. The shares were issued at 10l.; and so great was the mania, that, before a week was over, they were worth 80l.; and this before a single grain of gold had been acquired. The produce of the different companies he had obtained. The Imperial Brazilian, in 25 years, had produced 1,500,000l.; Morro Velho, in 10 years, 416,000l.; and the Cata Branca, in the same period, 240,000l. That at this time, after 25 years' work, they had obtained their money back, with 5 per cent. for the last 10 or 12 years; and the mine was now exhausted. The only benefit it had been to science, was the discovery of palladium, which had been applied to telescopes for astronomical purposes.

The thanks of the society were voted to Mr. Tennant for his interesting paper. Several diagrams of the different crystals of diamonds, topaz, and quartz, as well as others, giving their component parts, were exhibited.

The tramroads of the Monmouthshire Railway and Canal Company are to be converted into a locomotive line on and after the 1st of August next.

OPENING OF THE DUBLIN AND BELFAST EXTENSION.—This extension was opened on the 8th inst. from the junction station at Newfoundwell, near Drogheda, to the town of Dundalk, passing through Dunleer, and Castle Bellingham. The opening would have been earlier, but for the unusual floods in the White River carrying away the bridge near Dunleer. The constructive cost, including stations, but exclusive of working stock, has not exceeded 10,000l. per mile for a single line, with the land purchased and earthworks completed for a double one.

AN ASCHEM IN THE BREAST CURED BY HOLLOWAY'S OINTMENT AND PILLS.—About three years since, Mr. O'Flaherty, of Mill-street, Cork, accidentally bruised his breast. For months afterwards the pain increased, and the part became fearfully swollen. Various applications were tried without giving the least relief; ultimately an abscess formed, discharging a great quantity of humour, which debilitated her constitution to an alarming extent; at this stage, a lady strongly recommended her to try Holloway's ointment and pills, having witnessed their good effects on former occasions, which advice she followed, and these fine medicines answered most satisfactorily, for the wound was soon healed, and her health is now completely renovated. Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London.



**The Metallurgical Treatment of Ores.**

By JOHN MITCHELL, Esq., M.C.S., author of *A Manual of Practical Assaying, &c. &c.*  
No. XXXI.—(Continued from January 13.)

As shown in the last paper, the carbonaceous matters obtained during the solution of iron in acids are very variable in their nature. Pure carbon, or graphite, is obtainable only from grey iron, and the manner in which it behaves, during its separation from the metallic mass by solution, shows that it merely exists in mechanical combination; but the graphitic substance obtained from untempered steel, from ductile or malleable iron, and from certain samples of grey iron, and which is so readily decomposable by acids, is not pure carbon, but is a compound of carbon and iron; the proportion of the former has, however, not yet been accurately determined, but experiments on this point are now being conducted. Until this point is determined, the compound in question may be termed a *polycarburet*. This matter must not, however, be confounded with the brownish black residue obtained from tempered steel and white iron, by the action of hydrochloric and sulphuric acids, and which is converted into a reddish brown powder by the action of nitric acid. The polycarburet gives from 82 to 94 per cent. of oxide of iron by burning; a sextocarburet—that is to say, a compound of one atom of metal and six atoms of carbon, Fe C<sub>6</sub>—gives, by calculation, 86 per cent. of oxide.

**On the Action of the Alkalies on Iron.**—The fixed alkalies are without action both on iron and its oxides in the wet way; it even appears that their presence retards the decomposition of water. At a red heat, potash and soda are deoxidised by iron. On the other hand, cast-iron, fused with the alkalies, is at first converted into a steely iron, and, lastly, into pure iron, because the carbon alone is employed in the reduction. Experiment seems to show that the alkalies and their metals exercise no noxious influence on the quality of iron. For instance, a gun-barrel which had been employed many times for the decomposition of potash in the preparation of potassium, and which had deoxidised a considerable quantity, forged exceedingly well, and was neither hot or cold short.

**On the Action of Earthy Matters on Iron.**—Of all earthy matters, the nature of silica seems to have been most deeply studied. Berzelius combined silica with iron, by cementing iron filings with finely-powdered silica and charcoal. The iron alloyed in this operation with the silica, as, under similar circumstances, it combines with carbon. According to the experiments of Berzelius, silica does not act in a very marked manner, either on the tenacity or hardness of iron; but it diminishes the specific gravity. Iron containing silicon gives, by decomposing water, more hydrogen gas than others; this can be very readily explained—for silicon in oxidising requires more than its own weight of oxygen; whilst iron requires less than half its weight to convert it into peroxide. Stromeyer has made very extended researches in this class of compounds; but does not seem to have arrived at any very conclusive results. These experiments in the small way, however interesting they may be, often lead to very erroneous conclusions. In operations on the large scale, it is easy to see that silica is very hurtful, and a large quantity of cold short iron owes its fragility to the presence of a small quantity of this earthy matter. The tenacity of iron is considerably diminished by the presence of 0.37 per cent. of silica. It has been found, by the analyses of some very tender irons, that silica and a very minute quantity of phosphorus, were the only foreign substances present—indeed, in certain cases, silicon seems more objectionable than phosphorus. The quantities of silicon found by the author vary from 5 per cent. to 3.2 per cent. Karsten states, he has found as much as 3.46 per cent. Irons from furnaces in which coke is the fuel, generally contain more silica than those fed with wood.

Aluminum, according to Stodart and Faraday, seems, when in small quantity, to have no unfavourable action on iron. In their experiments on wootz, this earthy metal was detected, and they attributed to it the good qualities of wootz. Karsten states, that he has added clay to pig-iron during refining, and has repeated the experiments on the large scale three times. The large quantity of silicate of iron formed by this addition retarded the operation; but the quality of the produce did not seem altered in a sensible manner. The iron obtained was analysed, but gave scarcely a trace of alumina; although, by the method employed, it was thought a considerable portion would be taken up. In analyses of malleable iron, steel, and cast-iron, but small quantities of aluminum have been found; but the greatest amounts are generally found in cold short irons—hence it would seem that the presence of any notable amount of this earthy metal is prejudicial to the quality of the iron containing it. Faraday found from 0.024 to 1.3 per cent. of aluminum in wootz. An analysis of wootz, however, by Karsten, gave but traces of aluminum, from which he infers that it cannot be to the aluminum in the wootz that the good quality of the Indian steels is to be ascribed. Stodart and Faraday have observed that steel and malleable iron behave very differently in their combination with other metals. This assertion is very true; for it sometimes happens that a very small quantity of a foreign substance, insufficient to communicate any sensible bad quality to steel, much deteriorates malleable iron. Perhaps aluminum may be in this state. The following is the method pointed out by the above-named chemists for the preparation of an aluminumiferous steel:—Pure steel, or even malleable iron, is reduced to small fragments, stratified with charcoal, and submitted to a long-continued high temperature. A compound of carbon and iron is formed, possessing a deep grey colour, which is mixed with alumina, and heated for a very considerable time. The result is a very white brittle alloy, having a granular fracture, and containing 6.4 per cent. of aluminum; 40 parts of this alloy, fused with 700 parts of good steel, gave a malleable alloy of excellent quality. A second trial, made with 500 parts of the same steel, and 67 parts of the alloy of aluminum, gave a metal possessing all the qualities of the best Bombay wootz.

Calcium appears to behave in a similar manner to the other earthy metals. Iron decomposes lime at a high temperature; but the metals do not appear to have a very great affinity for each other. The late Mr. Mushet made numerous experiments on these two bodies, fused together in crucibles. The metal obtained was always hot short; but it is not known whether it contained calcium or not. Magnesium, barium, strontium, &c., appear to act much as calcium; but very little is yet known on this part of the subject.

**On the Action of some Substances on Oxide of Iron.**—Carbon, as is well known, reduces the oxides of iron—it is, in fact, the most powerful reducing agent, and is the only one employed on the large scale. If a certain proportion of carbon be added to oxide of iron, pure iron is obtained; if still less, pure iron is still obtained, and there remains a portion of the un-reduced oxide. Malleable iron may be obtained, according to Clouet, by the fusion of steel, with excess of oxide of iron. The reduction of the oxides of iron by carbon commences at a dull red heat. Karsten states, the peroxide changes at first into an inferior oxide, which is similar either to magnetic iron or ferrous scales, and which is completely reduced without being transformed into protoxide. This, however, is, I think, very unlikely; it appears to me more probable that the magnetic oxide is first reduced to the state of protoxide, and then finally to the metallic state.

Sulphur also reduces the oxides of iron; but it combines with the reduced metal—at least, when the oxide is not in very considerable excess, and the temperature not very high. In this case, pure iron is obtained, and a part of the oxide remains undecomposed.

Phosphorus behaves differently with oxide of iron. The phosphoric acid formed by their reduction, combines with a portion of the oxide; whilst the phosphorus, obeying its affinity for the metal, becomes converted into phosphure—at least, such is always the result when there is a sufficient excess of phosphorus. During the last few papers, the action of some substances on iron have been discussed, and the following seem to be the general conclusions to be drawn:—Iron cannot be separated from its ores without uniting in a greater or less degree with some other body, and especially the reagent employed in the operation. If, like some other metals, iron had but little affinity for carbon, its preparation would be comparatively simple; and if, on the other hand, carbon could not be separated, nothing but cast-iron would be known, but as, in the first case, carbon separates the oxygen from the ore, so does oxygen separate the carbon from the metal. If carburetted irons differed only (as some would lead us to believe) in the proportion of carbon contained, they would present much the same phenomena in their treatment by acids and other bodies. This is, however, not the case; and admitting, even that by this hypothesis we could account for the great variations these classes of iron exhibit in their hardness, tenacity, colour, &c., we could never explain the change of white iron into grey iron, and vice versa, without variation in the contents of carbon. On the other side, the effects produced by fusion and roasting, as well as the products of decomposition, evidently prove that carbon is contained in iron in several conditions, or states, of existence. Grey iron is the only variety containing free carbon—graphite, mixed with carburetted iron. During decomposition by acids, the graphite alone remains. The combined carbon undergoes considerable alteration; if the acids contained water, it escapes with the hydrogen gas, or is converted into an oily liquid, or remains as a highly inflammable black substance. If the acids employed were concentrated, a small quantity of the carbon is converted into carbonic acid, another portion is taken into solution, and a third forms a very inflammable brown powder. These products always present themselves when the carbon is combined with the whole mass of the iron. If, on the contrary, the carburetted iron contains a definite carburet of iron, mixed intimately with the mass, and which, like the phosphuret of iron, resists the action of acid, it is generally obtained in constant proportions. This happens when untempered steel, or white iron, rendered grey by roasting, is dissolved in acids. The action of acid on iron, containing a similar polycarburet, is more rapid than in nitric acid separates a reddish brown powder; from hard carburetted irons, black powder, which only becomes red after long contact with the acid. By the action of dilute sulphuric or hydrochloric acid, soft carburetted irons give a graphitic substance in considerable quantity; whilst the hard carburetted irons, treated by the same acids, give only a small quantity of a black car-

bonaceous matter. We may thus learn that carbon is contained in iron in three different states—1. As free carbon, or graphite. 2. Combined with the whole mass of the iron. 3. As polycarburet, dissolved in the whole mass. It will be noticed that this view differs slightly from that already put forth by the author; but it seems to meet all cases better than that before given. In next week's Journal, this *resumé* will be continued.

**GOLD MINING IN CALIFORNIA.**—There has not been any very important advances from California during the week, but all communications tend to confirm the reports of the not only undiminished, but the increasing produce of the precious metals. France appears at length to have aroused at the discovery of the value of this metallic deposit, and reports have been transmitted to the French Government by the consuls in Upper California, and in the various parts of the United States, relative to the gold and quicksilver mines lately discovered in the former country. In consequence, the Ministers of Marine, Foreign Affairs, and Public Works, having placed together the documents, received from the French representatives in America, submitted them to a special council of men skilled in mineralogy, and charged with the task of suggesting such measures as it might deem advisable to take in the interest of French industry. It has been decided by the Government, that an engineer of mines should at once proceed to California, to examine the nature of the country, and, from actual experience, send home accounts of a nature to enlighten French commerce as to the real state of the case. In consequence of that decision, orders were at once transmitted to Brest, to prepare a vessel to carry out the engineer in question. By a communication from Panama, we learn that a gentleman, who is a botanist and a passenger on board Her Majesty's frigate, *Constance*, went from the Bay of San Francisco to the Sacramento to gather plants, or bulbs. He unexpectedly came upon the gold deposits, and with only the trowel with which he dug for flower roots, he realised \$1500 worth of gold-dust in three days. One of the largest pieces, weighing 14 oz., he presented to the captain of the frigate. From the report of the governor of California, it is estimated that \$40,000 worth daily arrive at San Francisco, and that the Mormons had, up to the time of its general discovery by Europeans in August last, some rare pickings; and it is estimated by Governor Mason, that they possess between them from \$13,000,000 to \$14,000,000. The frigate requiring a new mainmast, the carpenter who made it received \$3 per hour, and complained then of losing money by the job. A powerful sensation has been created all along the Chilean coast, and people are leaving the most insignificant villages as well as the large towns. Several commercial houses have written to England for clerks, those they had having left their situations for the diggings. Grog shops were established on some parts of the Sacramento Valley—the price of a glass of spirits being a pinch of gold-dust, worth at least \$2. The price of gold at Valparaiso was \$18 to \$18 2 c. per oz., which, after freight, commission, &c., shows that no great reduction has yet taken place in the price of gold. The excitement has led to some exaggerated statements as to the exportations from Russia. The fact is, that the returns from the Ural and Siberia have increased gradually from 814 pounds in 1829 to 2000 pounds in 1848—the total being 16,450 pounds in 20 years, and reckoning each pound at 2000 lbs., it gives 32,900,000, sterling. The total, for the last 10 years only, is 12,300 pounds, or 24,600,000, and yet this production has had no perceptible effect on the market. One important fact, however, we must mention, and which is especially worthy consideration—that the last advices from Hamburg report an advance in the price of gold, although from the extraordinary reports of the produce of California, we might naturally have predicted a contrary movement.

**CALIFORNIA COLONIZATION.**—By the politeness of a London friend, we have been put in possession of a prospectus for forming a company in London to carry on the above-named object. The projectors propose immediately to send two agents to Washington to obtain a grant of land in Upper California; their objects are to settle a colony on the spot, and open a trade between the golden region and this country. In aid of these, they propose to provide ships and provisions for emigrants, erect warehouses on the spot for the reception of goods, and to build houses, &c., for the emigrants, that they shall find a shelter in the land of gold. The contemplated capital is half-a-million, divided into 104 shares, upon which 1/2 per share is to be deposited. The office is 6, Finsbury-square, London; the secretary, Robert Williams, Esq. We think this company are going the right way to work—viz., to secure land, and the right to work the mines, by negotiation with the United States Government. The system of *squating* where gold is in abundance is but a hazardous experiment at the best, destined in the end to be frustrated and annihilated by the American Government, when it shall come to exert its power over that remote region. An investment of this kind—unlike the thousand-and-one railway schemes—cannot prove otherwise than profitable to those concerned in it. The mere purchase of wild land in a new country, where no gold is to be found, is the most money-making investment ever made by Europeans in the western world. We remember, as early as 1801, a few wealthy merchants in Amsterdam purchased an immense tract of country, bounded on the Niagara River and Lake Erie, and stretching 80 miles east of these. In 20 years after the purchase the land was more than 40 times the value of the sum paid for it, and the Dutchmen made immense fortunes by the speculation. But in that region there were no mines containing gold, silver, iron, lead, or even coal. California abounds in all of these; and when we can couple the metallic wealth of the country with the enhancing value of the land, there cannot be the least doubt of the safety, and the wise forecast of the undertaking. From our intimate knowledge of the progressive improvement and rising value of new countries, by actual occupancy, we hesitate not to say, that it would be no improbable event, that what shall cost this company but 100,000, may be worth to them more than one million pounds at the end of ten years after the purchase. Then, again, when superadded to the rise in the lands and the mineral wealth, this country contemplates the advantages of an extensive trade between manufacturing Old England, and the gold-teeming region of the far west; who can tell what may be the future advantages of such an investment? The East India Company, whose fame for wealth has filled the civilized world, started with poorer prospects of vast accumulations, than would an efficient company now start, to engross the mines and control the trade of Upper California, in connection with the Old World. We think that a portion of the emigrants, at least, should have a direct interest in the company, by owning stock therein; so that at each end of the long line stretching from London to San Francisco, there should be watchful guardians over the joint concern, feeling the impulse of *self-interest*, to make all go right. We are such ultra free traders, and have such an abiding faith in the potency, the renovation, and redeeming power of extended commerce, it would be the delight of our souls, to see the golden ore of California shovelled off from the decks of vessels on to the wharfs of the Thames, while out-going vessels were laden with the goods of Manchester, and the wares of Birmingham and Sheffield, consigned to the company's agents at San Francisco. One grand object of this company is to consummate so delightful a reality. Perhaps a few years will accomplish it.—*Isle of Man Times, Feb. 10.*

**GOLD IN SCOTLAND.**—It may not be generally known that gold is to be found in Scotland. Gold dust was gathered in the river, near Crawford, in Lanarkshire, in the reign of Queen Elizabeth; and since, by the Earl of Hopetoun, at Leadhills, to little profit. It was also dug in Bathgate hills, Linlithgowshire; in Perthshire, and other parts of the country. It is still to be found on the tops of the rocks, and also mixed with other metals; but the searching for it is rather a matter of amusement than of serious occupation. Our ancestors had the good sense to discover a better kind of diggings—viz.: the application of the spade and the plough to our then barren soil, and of the result let those judge who choose, by an inspection of our rich fields and cultivated farms, or we may refer to the well-known character of our farmers and Scotch gardeners.—*Correspondent of Kelso Mail.*

**SILVER MINES.**—The working of the silver and lead mines at Combmartin, which were recently abandoned by the late shareholders, have been resumed by a London Company under very favourable circumstances.—*Exeter Gazette.*

**NEW PRINTING TELEGRAPH.**—We have had the pleasure of privately inspecting a new printing telegraph, on the hydraulic principle, the invention of Mr. W. H. French, of Cardiff, which, for simplicity and certainty, is far superior to any other, either hydraulic or electric, that has yet come under our notice. The invention being as yet unpatented, we cannot, of course, go into any description of it; but we may state that, without the use of any arbitrary signs, or the necessity of receiving answers from the various stations as to whether or not a message can be understood, a communication can be made, at the will of the operator, to one, two, three, or a dozen stations on the main line or branches of a given district of country, which will be legibly printed on a slip of paper, something like the column of a newspaper, to any length, or a conversation can be carried on on the same paper between two points—the intermediate stations, by a simple contrivance, being thrown out of the line of communication. One advantage of this system is, that the telegraph becomes the registrar of the communication, and prevents any dispute as to its real import; while another, and perhaps the most important is, that should an attendant at any station be absent from his duty he will, should any message be given in the mean time, find it on his return legibly printed in the ordinary character, a bell continuing to ring from the commencement of the communication being made until observed by the attendant, and to use a familiar expression, thrown by him out of gear. On point of economy this telegraph must, when patented, excite universal attention, as it can be erected for less than one fourth the charge of the exposed electric wires, and for something like one-tenth of the price now charged for laying those wires under the streets, whilst its station machinery is so simple that any child who can read at all can manage it with the utmost certainty; and we believe the day is not far distant when, irrespective of its application on lines of railway for communicating from station to station, from town to town, or one portion of a town to another, most of the large manufacturing and mining establishments in the kingdom will be fitted with these printing telegraphs from one part of their premises to another with which it is necessary to have frequent communication.—*Morning Post.*

**COMMUNICATION BETWEEN THE ATLANTIC AND PACIFIC OCEANS.**

The great excitement caused by the discovery of gold in California has again turned the attention of the public to this important question, and there seems every probability that the hitherto-existing difficulties have been overcome, and that the long-desired communication between the two great oceans is in a fair way to be accomplished. Articles of agreement for the construction of a railway across the Isthmus have been entered into and duly signed. The contractors are Messrs. Aspinwall, Stephens, and Channay. The line is to be completed within three years. There is no doubt that this will open up a vast extent of hitherto unexplored territory—and, probably, rich in mineral treasure—greatly facilitate and extend our commerce with the Pacific, by throwing open new and easier means of access, and carve out fresh channels for the profitable employment of capital and industry.

Although we cannot but hail this movement with satisfaction, we conceive this is only the first step towards a still further development of the resources which Nature has so bountifully placed in the Americas; and we have no doubt that, in a few years, this will be followed by a canal. To England, in a commercial point of view, this is of the greatest importance; at present our vessels have either to encounter the dangerous passage round Cape Horn, or the tedious one by the Cape of Good Hope. The transport of heavy goods by all across the Isthmus, and their re-shipment, would cause considerable expense, inconvenience, and difficulty—so that, in many cases where economy was in question, the circuitous route would still be preferred. The formation of a canal would obviate these difficulties, and the products of the eastern and western hemispheres could be interchanged to the mutual advantage of both.

This is a question of importance to the whole world; but to none more so than ourselves—the greatest commercial nation of the world, and whose flag is to be seen in every quarter of the globe. Three projects have been proposed to connect the two oceans by means of a canal—the first by the Isthmus of Panama, in New Granada; the second by the Isthmus of Tehuantepec, at the southern extremity of Mexico; the third by the lakes of Nicaragua, in the same republic. The concession of the first was made by the Government to Charles Biddle, in 1838; but this having lapsed, it was given to a French house—Salaman and Co., of Panama. The Government agreed to grant lands and rights for 60 years; at the termination of that period, the canal was to be given up to the public, and the concession was to be renewed for 10 years, on the condition of a tax of 1 per cent. to be levied on the profits, to pay the interest of the foreign debt. The route proposed—the rivers Chagres and Trinidad, on the Atlantic side—should be united with a canal of 25 miles to the River Fafan, which runs into the Rio Grande to the Pacific. Building materials of all kinds are easily accessible. The canal was to be 160 ft. in width, and 22 ft. in depth, to admit vessels from 1200 to 1400 tons, to be completed in 10 years, at a cost of 698,000. The tonnage passing through was estimated at 499,809 tons. The tolls, at 23 per ton, would amount to \$999,618; working expensary, \$295,000—leaving a dividend of \$704,618, or 122,924. The harbours are good, but the climate is unhealthy. In the second route, the Isthmus is 150 miles in width. The engineer proposed to avail himself of the River Cotoacacoles. This river, with its windings, is navigable for 160 miles, to be followed by a canal of 60 miles, going over a table land, at a place called Tarifa, 535 ft. high, and falling from thence to the Pacific, 660 ft.—the canal to be 22 ft. deep, and 122 miles, requiring 160 locks. This was estimated at the same rate as the Caledonian Canal—to cost 3,400,000. The country is very salubrious, there is an active Indian population, the soil is fertile, containing forests of timber, and mines of gold and silver.

The third, which is the best and most favourable route, is to commence with the River San Juan de Nicaragua, which runs into the lake which communicates with the smaller body of water, called Lake Leon, separated from the Pacific by a narrow Isthmus, through which a canal of 11 miles could be carried to a river going to the Pacific. The route commences at the Atlantic side; by the river to the lake, the length is about 100 miles, its breadth 100 to 200 yards; there is a depth varying from 14 to 8 fms. The route is studded with cascades of 12 feet, which would require three locks. On arrival at Lake Leon, which is 35 miles in length, distant from the Pacific 29 miles, the highest land above the level of the lake does not exceed 51 feet; 11 miles from this is the River Tosta, with a mean width of 45 feet, and a depth of 6 feet at low water; by cutting a communication with this, we should arrive at the port of Rialejo. The length of this would be 278 miles, only 82 of which would require works. The proposed depth of the canal was 33 feet, and the width 147 feet, so as to be calculated for merchantmen of 1400 tons. The cost is estimated at 2,000,000, to be paid in 10 years, by instalments of 200,000 each. The canal, at one point, is 400,000, for casualties, and a reserve fund. The revenue is taken at 900,000 tons; one month would be saved to European vessels, and two to those of the United States; this is estimated at a saving of 15s. 7d. to the former, and 39s. the latter; the contemplated toll, in one instance, to be 10s., and 20s. in the other. This would give 600,000. per annum, which, after leaving 2 per cent. for maintenance, and 1 per cent. for sinking fund, would yield a dividend of 12 per cent. on the capital. The Government of Nicaragua, it is believed, would concede to the company the land on both sides of the canal, to the extent of two leagues, being about 1,200,000 acres, the value of which, at 1s. 6d. per acre, would be 90,000. The climate is salubrious, and there are harbours on both sides. Beef is at the rate of 2s. per 25 lbs., maize 16s. per 360 lbs. Wages about 89 per month. The country is noted for its fertility of soil, and the extent of its natural productions. During the four months the engineer, Mr. Bailey, was employed on the survey, with a party of 40 men, none were sick, although they were often sleeping in the open air.

**THE SILVER MINES OF GUADALCANAL, IN SPAIN.****CHRISTMAS IN THE SIERRA-MORENA.**

[The following article, copied from a Spanish newspaper, contains some account of the proceedings of an English Company, who have leased the celebrated silver mines of Guadalcanal, in Seville, in Spain, which have been under water for a period of 150 years! Before that time they produced to the Spanish Government 100,000, per annum in duties alone, and from the proceeds of these, the palace of the Escorial was built. They were the property of the Fuchars, rich contractors, who, not satisfied with the enormous wealth they derived from them, secretly took away the ores from a new lode they discovered, without giving notice to the Government; and, to prevent imprisonment and confiscation, they let the water into the mine, and for 150 years they have remained in the state in which they were thus left by them. About six months ago, however, the mine was purchased by an English company on the most advantageous terms, and a capital of 10,000, was raised among a few English adventurers, in order to work them. Mr. Nicholas Harvey, of Hayle, who drained the lake of Haarlem, in Holland, being one of them, and an engine of great power having been obtained, and transported, under the direction of Capt. Michell, and the engineer, Mr. Duncan Shaw, to the mine, bids fair soon to drain the 130 fathoms, and discover its hidden wealth once more. From advices received since the publication of the following account, the engine has drained the mine in one month to the 31 m. level, and some very valuable specimens of silver ore have been taken from the lode, and are now on their way to England.]

In the *Mining Journal* of Sept. 30, we furnished our readers with the history of the silver mines of Guadalcanal; we related the manner in which those rich veins were discovered by two Spanish peasants, the enormous quantities of ore which they yielded, during 140 years; then, how, in order to free themselves from the proceedings instituted by the Court of Madrid, the proprietors fled, having first taken the precaution of flooding the mines. We recounted the oft-repeated, but invariably unsuccessful, attempts of the Spanish Government, and the English company, to drain the water from the mines, and render them fit for working. After having given this history, supported by official documents, we announced the departure from England of a vessel laden with powerful apparatus, manned by fifteen stout Cornish miners, and commanded by two distinguished engineers, Mr. D. Shaw, and Capt. Michell. Since then, all things have smiled on this important undertaking. The vessel has made a quick and prosperous passage, landed its crew and machinery on the quay of Seville, and both the men and the apparatus have passed over, without inconvenience, the 84 miles which separate that city from the place of their destination. The preparatory work accomplished, the drilling and mining habits in a condition to receive their new inmates and the draining implements, it only remained to put the latter in order, and prepare all things necessary for commencing operations. Ten weeks sufficed for the engineer and his assistants to bring this task to a satisfactory conclusion, and all was ready on the 23rd of December.

The gigantic pump might, consequently, have entered on its subterranean labours from that day. But, like a thorough Englishman, the engineer determined to give the inauguration of the enterprise a solemn date—that of Christmas-day. He went further; he assembled some of the nobilities of the country, and, like a true son of Albion, collected on the spot a quantity of solids and liquids sufficient to have satisfied the cravings of a thousand famished Irishmen. The results of this step were advantageous, for instead of some 50 persons, the entire population of the neighbouring country flocked to the scene of the enterprise. Alcades, lawyers, priests, shopkeepers, men, women, and children, deserted the little town of Guadalcanal, and braved, some on foot, others on mules, the most abominable of all things—a Spanish road. The undertaking excited in a high degree the curiosity of these people, and interest in other respects. But, however, persuaded they might be of the superiority of British skill and perseverance, they were generally doubtful of success; the oldest among them shrugging their shoulders whilst they related to surrounding groups the traditions bequeathed to the country of the many unfortunate attempts made and abandoned.

At length the signal is given, the steam grows in its iron-bound cage, and the huge machine begins to move its formidable valves. After two centuries of darkness the water beholds the light, and flows, stream-like, making large furrows in the earth, after the manner of the torrents of Atlas. The entire population run from the pump to the well, regarding with feverish anxiety the play of the former, and its effects on the latter. After four hours' labour, which no obstacle could overcome or even diminish, the order to desist is given by the engineer. The water-mark had been lowered five feet, and this result, which surpassed the most sanguine expectations of the workmen themselves, was received with uproarious acclamations by the assembled multitude. It then only remained for those present to do justice to the repast; their incredulity was vanquished, and Spanish gravity put to the test. Then might be seen the Sanor of Guadalcanal—forgetting the traditions of the Olla Podrida—making resolute onslaughts on the "roast beef of old England." The Andalusians present were not forgotten; from 50 to 60 lbs. of bonbons, and cakes without number, were offered with civility and demolished with satisfaction. On the morrow, the dawn had no sooner lightened the Sierra-Morena, than cries of joy and shouts of merriment were yet to be distinguished, together with English and Spanish songs commingled and confused. The notes thereby created did not, however, prevent the occasional impression of British lips on Andalusian cheeks being heard. Nor did the Alcade himself cling to formalities, such was the effect of the general enthusiasm.—*Extracted from Clamor Publico (Madrid paper).*

**REGISTRATION OF RAILWAY SHARES.**—So much inconvenience and loss have been suffered and felt by the sellers of railway shares, through the non-registration, in the companies' books, of the transfer on the part of their purchasers during the period of falling prices in shares, that very great satisfaction is expressed on the Stock Exchange at the decision of Vice-Chancellor Knight Bruce in the case of *Wynne v. Price*. The learned judge decided, in substance, that the buyer of shares, even though he bought them of a jobber, was bound to register, and was liable for all loss that the seller experienced by his failure to register. Little doubt had been felt that such was the law, but the absence of the express decision had given defaulting or dishonest parties the excuse for not fulfilling their engagements. All doubt is now removed, and the practice (which was very prevalent at Leeds, and some other northern towns) will, it is to be hoped, be now exploded.



## LITERARY NOTICES.

The Compendium of British Mining.

ORIGINALLY COMPILED AND PUBLISHED IN 1843.  
 REVISED, CORRECTED, AND ENLARGED FOR THE "MINING JOURNAL."  
 BY J. T. WATSON, ESQ., F.G.S.

**GREAT ROUGH TON CONSOLS**, in the parishes of St. Cleather, Davidstow, and Altarnun, in the County of Cornwall, about five miles from Camelford. Divided into 512 shares; 22l. 10s. per share paid up. Conducted on the Cost-book system. The shares are firmly held, more than two-thirds of them being owned by Messrs. J. and William A. Thomas, of the Devon Great Consols (Marin), the latter gentleman undertaking the office of purser. Mr. J. H. Hitchins, of Tavistock, consulting surveyor; Capt. Joel Hitchins, agent. This concern is comprised under two leases, and extending over a surface of 900 acres, and being about 1000 fathoms on the course of the lodes. No. 1, Old Park, is held from Richard Spry, Esq., for 21 years from the 8th of May, 1846, at 1-15th dues. No. 2, Lamlayr Moor, and other parts of the manors of Penpont and Treglasta, from the Right Hon. E. Granville, Earl of St. Germain's, Miss Margaret Hocken, Augustus Coryton, and George Haye, Esqrs., for 21 years, from 29th September, 1846, at 1-15th dues. This district is comparatively unexplored, only two imperfect attempts having been made on Bray Down to the eastward, and now abandoned. The sets under consideration are immediately at the junction of the granite and killas. The principal lode has been costeained upon for nearly 700 fathoms, and presents the most flattering appearances, being 18 feet wide, composed of the finest gossan, and the capely part of it having spots of copper and mundle throughout. A 40 inch steam-engine has been erected, and two perpendicular shafts, about 210 fathoms apart, are sinking, and are calculated to cut the lode at 60 fms. deep. The eastern shaft is now down about 39 fms. from the surface, and a cross-cut is driving to intersect the lode, which it is expected will be accomplished in less than a month. The sinking of this shaft is suspended for the present, on account of the quickness of water, but will be resumed as soon as the weather permits. The western shaft is down about 53 fms. from surface, and is to be continued until the lode is met with in the shaft. A cross-cut was driven at 39 fms. from surface, to intersect the lode, which has been cut through, and found to be 4½ fms. wide in all, composed principally of exceedingly strong capel, with a hulk or leader, from two to 3 ft. wide, for the most part carrying spar, with the black oxides of copper and iron; this shaft, in the course of sinking, has been going through numerous branches of black oxide of copper and iron, mundle, and spar, indicating favourable results on the intersection of the lode in the shaft. The whole of the works are carried on in the most spirited manner, and with a determination to discover the true value of the property, in the shortest possible time compatible with the judicious application of capital.

We have inspected at the General Telegraph Company's Adelpi, a new method of arranging any number of telegraphic wires for crossing rivers, channels, or arms of the sea, by which they are rendered immeasurably more compact, and less liable to accident than by being laid singly, however well protected. The plan has been introduced by Mr. Francis Whishaw, whose patents, connected with various kinds of telegraphs, we have noticed on former occasions. It consists in forming any number (say six) of single fine copper wires already coated with gutta percha, to a diameter of rather better than one-eighth of an inch, into a twisted rope, to be effected by machinery, which will thus become greatly increased in strength, and each individual wire, while its insulation is perfect, will thus be protected to the extent of the combined powers of the six. It is proposed, we believe, by Mr. Whishaw, merely to give this rope a coating of some indestructible and nonconducting paint; but we have before observed, and still think it probable, that on carrying out the principle of the submarine telegraph, it will be found necessary to cover all insulated wires with strong envelopments of fibrous material, and then again protected by bituminous matter. We think it would be highly interesting to the public at large, if the company were to give a thorough test of this mode of insulation, by laying down about two miles of the combined wire in the bed of the Thames, and carry on a communication from some establishment on the Surrey side with the company's offices in the Adelpi. Numerous short sentences might be printed by the printing telegraph and circulated gratuitously; a game at chess might now and then be played, one player being placed at each extremity of the communication, and many other pleasing arrangements entered into by which the public would become much interested in the final success of the undertaking.

ENGLISH MINES.

**GROWA SLATE QUARRY.**—Mr. Peter Jeffery (February 16) reports—Complying with your desire that I would visit the parish of Trevalga, Cornwall, and inspect the Growa Slate Quarries, and report thereon to you my opinion as to the quality of the slate, and the facilities that offer for the shipment of the same, I beg to state that, on my arrival at the quarries, I received much information from Mr. George Stannard, the captain, who has been employed 15 years. It pointed out to me that the principal strata of slate and stone in the cliffs are the Trevalga and the Gwennowen. The latter stratum is great. Machinery is fixed on the cliff for the conveyance of the slate on board the vessel, distant about 60 fms. from the base of the cliff, where an anchor is laid down, connected by a cable to the machinery on the cliff; and, by means of this connection, the slate is conveyed from the quarry to the deck of the vessel. The haulage is effected by raising about 8 cwt. at a time; and, in the afternoon, the slate was brought back to the cliff by reversing the action of the screw, which is done by means of a rope passing over the top of a single horse being sufficient for the purpose. This gives a most decisive advantage to these quarries over inland quarries, where cartage to the port or wharves must be added; and, as the slate in the Growa Quarries is of a superior character to the



**WHEEL TREMAYNE.**—Capts. J. Phillip and W. Blewett (Feb. 7) reports  
—We have commenced a cross-cut to drive south in the 70 fm. level, east of the old flat-  
tired shaft, to intersect the south lode near Madder's shaft; the ground is favourable for  
this work, and it is hoped that by driving up to meet at this point in about four months, the  
ground should continue the same, and, as at present, that we should see the lode 24 fm.  
deeper than we are at present. In the 70 fm. level, east of Alexander's shaft, on Wall's  
side, the lode is 15 in. wide, producing a little copper ore; we are just getting under the  
ore ground we had in the 60 fm. level, we hope this lode will improve very shortly. In the  
50 fm. level, west of Madder's shaft, on the south lode, the lode is 3 ft. wide, opening  
moderate tribute ground; in the 50 fm. level, east of ditto, the lode is 2 ft. wide, pro-  
ducing a little copper ore; in the 40 fm. level, west of Madder's shaft,  
the lode is small and poor at present; in the 40, east of ditto, the lode is 2 ft. wide,  
producing a little tin, opening moderate tribute ground. In the 30 fm. level, west of  
Wheel Margaret shaft, the lode is 15 in. wide, poor at present; we are laying down  
the lode, and preparing to sink Wheel Margaret shaft under the 30 fm. level as fast as possible

**WHEAL CURTIS MINING COMPANY.**—In the Standaries Court, on the 8th inst., Mr. Hoskins appeared before the Vice-Warden, in behalf of this company, to move for delay in the sale of the mining materials. He founded his motion on an affidavit of Mr. Bull, the solicitor of an adventurer named Thatcher, who had applied to the Lord Chancellor to wind up the affairs of the company, under the Joint-Stock Companies' Winding-Up Act, the decree being that it should be so wound up, and an official manager was to have been appointed on Monday last. He only asked for a delay of three months, the contributors to the company being solvent, and it being intended to pay all the creditors in full, without selling the materials. Mr. Stokes and Mr. Roberts opposed the motion, as in the event of delay taking place, and the officer of the court being put in possession, as proposed, the official manager appointed by the Court of Chancery, might interfere with the possession by the inferior court, and sell the engine. The Vice-Warden thought there could be no objection to granting the rule, for, under any circumstances, a sale was not hastily made. He, therefore, ordered that the decree be absolute for a sale, the registrar to exercise his widest discretion as to the time of sale. An officer to be put in possession, at the request of Mr. Hoskins, as well as by the usual practice of the court.

A general meeting of shareholders was held at the offices, Birchington, on Thursday, the 8th inst.—CHARLES CHIPPINDALE, Esq., in the chair.—The statement of accounts was produced, showing—Balance in favour of mine, 9s. per last report, 114*l.* 9*s.* 9*d.*; call of 30*s.* per share, 384*l.* = 498*l.* 9*s.* 9*d.*—By Oct. cost, 36*l.* 18*s.* 3*d.*; Nov. 34*l.* 12*s.* 8*d.*; Dec. 82*l.* 8*s.* 10*d.*—leaving balance in hands of purser, 244*l.* 10*s.*—Outstanding liabilities, January cost, 35*l.*; damage to land, 128*l.* = 213*l.*—Reports from Capts. J. Bryant, R. Dunstan, and W. Lean, having been read, it was resolved, that it be left to Messrs. C. Chippindale, W. Mount, and T. Hackett, to decide, from time to time, until the next general meeting, what work shall be done in the mine.—Capt. W. Lean was re-appointed purser, at a salary of 2*l.* 12*s.* 6*d.* per month.—It was agreed that the arrangement made by Messrs. Chippindale and Mount, to pay Mr. G. Rabey 128*l.* for damage to land, in lieu of 35*l.* 8*s.* claimed, should be acceded to, and the amount paid.—The purser was directed, either by himself, or through the merchants to whom the mine is indebted, to take legal steps, in the



Vice-Warden's Court or elsewhere, against all shareholders who shall not within two weeks pay up the call made the 26th October last.—A call of 10s. per share was made.

#### WHEEL SOPHIA MINING COMPANY.

A meeting of shareholders was held at the counting-house, on Thursday, the 8th inst. Mr. JOHN BENNETT, in the chair.  
The accounts were examined and approved, showing—Nov. 1, 1848: balance in pursuer's hands, 8s. 6d.; arrears due, 241l. 6s.; call of 5s. per share, due Jan. 1, 123l. 10s.—373l. 1s. 4d.—Cost for Nov., 42l. 12s. 10d.; ditto for Dec. (including merchants' bills), 72l. 17s. 6d.; arrears now due, 245l. 6s.; balance in pursuer's hands, 12l. 5s.—373l. 1s. 4d.—The amount of arrears appearing on the increase, the solicitor was requested to proceed against all parties in arrears. The thanks of the meeting were given to Captain Carpenter, for attending this meeting and examining its proceedings. A call of 5s. per share was made, payable on or before the 1st March. A vote of thanks being passed to the chairman, the meeting separated.

The following report, from Capt. J. Carpenter, was read to the meeting:—  
Feb. 8.—Nothing has occurred to alter my opinion as regards the prospects of the mine since my last inspection, in June, 1848. Taking into consideration the hard channel the shaft has been sunk in, and the limited number of hands employed both in drawing stuff and water, I think the progress has been very fair and proportionate. The shaft is now 13 fms. under the adit level, where I would recommend a cross-cut to be driven from, to cut the lode, as the ground in the north side appears to be very much changed in favour of the lode, being within a short distance, agreeable to its underlay south in the adit level, about 4 fms. The capels, or branches, that are presenting themselves indicate an improvement in the lode, being impregnated with copper ore of an excellent quality, mixed in a white spar, very congenial for copper. I think there is every probability of the hard ground being carried off south faster than the lodes underlay, as the heads of ground, which are very smooth and mineralized, appear to be completely mastering the strata; therefore, in such cases, we conclude the prospects are a sufficient warranty for further development in depth and extension on the lode.

#### WHEEL VINCENT MINING COMPANY.

The usual two-monthly meeting, for auditing the accounts of November and December, was held at the Bull Hotel, Leadenhall-street, on Tuesday, the 13th inst.—JOHN PARLEY, Esq., in the chair.—The accounts presented showed a balance of about 51l. due to the pursuer, to liquidate which, and for further operations, the sum of 2s. 6d. per share was deemed necessary, on or before the 1st March. A deputation, consisting of Messrs. Wiseman, of Kelvedon, Essex, and George Richardson, of Great St. Helen's, London, having been appointed at a previous meeting to visit the mine, presented a report replete with information, and more than usually abounding in useful observation, emanating from gentlemen only theoretically acquainted with mining operations, was read with evident satisfaction, and unanimously adopted.

The following report, from Capt. John Spargo, was read to the meeting:—

Feb. 9.—We have cut the south lode, which is producing some excellent work for tin; there is no doubt, as we drive further to hill, but that it will much improve. We shall commence stamping immediately, and hope shortly to get some for the market. I am sorry we have taken such long time to cut this lode; but no one can tell whether the ground is hard or soft until we get to it; and here we have met with some very hard bars of ground, which has been against us, but the ground on the course of the lode is favourable for driving. I hope in a week or two we shall get a good pile of tin broken for the stamps. Our lobby is getting on at present very satisfactorily; but we have met with some very hard rocks between the shaft and overburden, which has thrown us back considerably—this, connected with unfavourable weather, has caused such delay; however, we are now driving in solid stuff, and we hope, are past all the hard rocks. Our leats are completed within a few fathoms, and the smith is getting on well with the rods, &c. I hope the plan I have adopted, in bringing up the adit or lobby, will answer; if so, it will be completed long before expected. At the same time, the work about the wheel-pit, &c., will be carrying on. I shall be able to say, by another week, whether the plan adopted will answer. As regards the new lode, we have not seen it since a week or so after cut. Capt. Hallow, who was sent by Mr. Vincent, was the last that saw it, and the last that broke tin from it, who stated that it was a real good lode, and that, after the shaft was down, it would pay well. This I knew before; still his opinion was good as a practical miner, and one acquainted with tin in a great many years; he tried the rock at the stamps pit, as well as the general produce of the lode, and found it to be of good quality. I can only state to you the truth—tin, or no tin, I cannot look into the earth unexplored; but I can only tell you this, that, if this lode proves unproductive, I may as well give up reporting on lodes; furthermore, I beg to say, that if the lode continue as at present to the 10 fms. level, you will shortly have your small entree denied to you, which, you may feel assured, I shall use every effort to accomplish. I beg further to say, that every shilling shall be, and has been, spent judiciously; other particulars, I have no doubt, Mr. Mayhew will explain to you.

COMBROW is looking very well in the sump and bottom levels.

EXMOR WHEAL ELIZA.—Capt. W. H. Whitford and T. Dunn report.—We anticipated cutting the cannel lode in the engine-shaft on or about this time; but there are no symptoms of it as yet. Our sinking does not exceed 3 ft. per week; we hope to be in a position to report more favourably shortly.

#### MINERAL DISTRICT OF EAST DARTMOOR.

SIR.—Knowing that you are a friend to the mining community, I beg to hand you the following remarks on the mineral district in the eastern part of Dartmoor, which I have recently visited. I am a Cornish man, and have been a miner for nearly 40 years, 15 of which I have acted as an agent, and in all my experience I have not met with such favourable indications as the mines on Dartmoor present. I have never seen so much work done by the ancient miners in any of the mines in Cornwall, although we have good tin mines there, which have returned much profit to the shareholders. On my inspection of the eastern part of Dartmoor, I was much surprised to see the excavations that had been made by the ancient miners; they have opened on the backs of the lodes, from the Birch Tor or Vitrifer mines, for upwards of three miles in length, and from 10 to 15 fms. in depth, and in some places from 80 to 90 ft. wide or more. I understand that this mine has been worked a great number of years, and has been very productive. Immediately adjoining this mine, on the east, is East Birch Tor, on the same lodes. The ancient miners have here opened on 10 distinct lodes, on the backs of some of them to a very great extent in length, from 60 to 70 ft. deep, and from 70 to 80 ft. wide; these mines are now working with spirit. Another mine to the east of East Birch Tor, has recently been taken by a Bristol company, and they are raising very good stones of tin on the backs of the lodes. AN OLD MINER.

#### ACCIDENTS.

Explosion at Darley Main Colliery.—In last week's Mining Journal, we gave the particulars of the inquest on the sufferers in this truly deplorable case. Mr. Tremerehere, the Government Commissioner, being the last witness examined (in addition to what we gave of his evidence last week), called the attention of the jury to the several inquiries in Parliament, and on particular inquiries which had taken place, in all of which there was a leaning towards a system of compulsory powers, and which, probably, led the members of the Legislature to consider it a matter of too much difficulty to allow them to pass a measure of the kind; his opinion was formed after much inquiry and careful consideration, that a system not involving compulsory powers would be practicable, and of greater extent effectual. There should be power for the inspector to examine and report, and to place such report on record, with power to the manager of such mine to dissent from such report, and to call in some disinterested third party, whose report shall also be placed on record; he then alluded to the two general causes of explosions in pits—bad ventilation, and the carelessness of the men; and he believed that the inquiries and reports of the inspector, and the full discussion which the system of ventilation, in any particular mine where he saw defects, would be subject to, would lead to the necessary modification, and in a few years reduce the chances of explosion to those cases which could be traced to the carelessness of the men. The coroner then summed up the evidence, and declared his strong and full conviction of the soundness of the views of Messrs. Tremerehere and Smyth, that all collieries be subjected to frequent inspection by scientific and properly qualified persons, to be appointed by the Government, when any error in the system of ventilation would be at once discovered and pointed out, and consequently a great saving of human life ensue. The Government ought, therefore, promptly and peremptorily to interfere, or it was to be feared these calamities would continue to be frequent occurrences. (Here Mr. Locke assured the coroner that the practice should be discontinued.) As to this accident, he believed there was sufficient capability for extended ventilation, although he had no doubt the present explosion was occasioned purely by accidental circumstances. He did not for one moment suppose that the evidence would warrant a verdict of manslaughter against any one, for he believed the explosion to have been purely accidental. He strongly recommended, however, that the verdict should be accompanied with the recommendation for the adoption of a system of underground inspection of mines, by qualified persons appointed by Government, and with the expression of a desire that they would immediately obtain the passing of an Act for that purpose. He would be happy to convey to Sir George Grey any opinion to that effect. The jury received these remarks with the most evident approbation, and returned the following verdict:—We find a verdict of "Accidental Death" on the 75 bodies we have viewed, caused by one or more explosions of carbonated hydrogen gas, or inflammable air, which took place on the 24th of January last, in the Darley Main Colliery; and we most strongly recommend to the proprietors that a better mode of ventilation be adopted before they recommence working the mine, as a preventive against any similar occurrence. And we think, from the evidence given before us, that the removing of the machinery used for drawing water out of the upcast shaft is essentially necessary, so as to allow the air passing out of the mine to have a better and freer outlet. And we also declare that Mr. Badger, the coroner, report to Sir George Grey, and that he make known to her Majesty's Government, that we think it advisable that they should appoint a scientific and practical person to occasionally inspect the collieries in this district, and see that there is proper ventilation, and hear any complaints by the workpeople employed therein.—JOSEPH POSTER, foreman. The coroner expressed perfect concurrence in the verdict, and it appeared to afford entire satisfaction to the numerous individuals present.

Kingswinford.—As E. Cramp was removing some stones, which supported the mine, in a pit at Mr. Chavasse's colliery, between 3 and 4 tons of coal suddenly fell and killed him.

Bowley Rags.—Frightful Death.—Joseph Green met with a horrible death, by, it is rumored, accidentally falling down the shaft of a pit, 240 yards deep, at Old Hill, while in an intoxicated state. At the inquest, held on the body, it was stated that the deceased had been fighting during the evening on the pit bank with Joseph Lewis; and another rumor was that the deceased was knocked down the pit, round the mouth of which, police constable Rogers stated, there were marks, as though the deceased had endeavored to save himself from falling down the shaft.—Wolverhampton Chronicle.

Aberdeen.—M. Davine was killed in one of the coal pits at Crumston; his arm was injured by a fall of coal, when mortification ensued, which ended in death.

Strey Park.—John Whear was instantaneously killed by the sudden explosion of a bit in this mine.

#### ROYAL COLLEGE OF CHEMISTRY, OXFORD-STREET, LONDON.

The PRACTICAL COURSE OF INSTRUCTION in this institution is under the direction of Dr. A. W. HOFMANN and assistants.  
The NEXT SESSION will commence on WEDNESDAY, the 7th MARCH, and end on TUESDAY, the 31st JULY next.

The fee for students, working every day during the season, is—  
Four days in the week.....£15 0 0  
Three days.....12 0 0  
Two days.....10 0 0  
One day.....5 0 0  
Hours of Attendance from Nine to Five.  
Further particulars may be obtained on application to the Secretary.

WILLIAM JOHNSON, Secretary.

#### CIOAPO MINING COMPANY, 22, Austinfriars, Feb. 16

1849.—Notice is hereby given, that the HALF-YEARLY MEETING of shareholders in this company will be HELD at the company's office, No. 22, Austinfriars, on Wednesday, the 28th inst., at One o'clock precisely.  
By order of the directors, FRED. GRELLET, Secretary.

#### EUROPEAN GAS COMPANY, 39, Finsbury-circus, London.

Feb. 15, 1849.—Notice is hereby given, that an EXTRAORDINARY GENERAL MEETING of the shareholders will be HELD at the house of the company, 39, Finsbury-circus, London, on Wednesday, the 7th day of March next, at Two o'clock in the afternoon precisely, for the purpose of confirming the resolutions unanimously adopted at an Extraordinary General Meeting of proprietors, held this day.  
By order of the board, J. B. GREAVES, Secretary.

#### NATIONAL GAS BURNER.—After 18 months' trial, accompanied, in many instances, by severe tests, the result of which has elicited unqualified approbation, the NATIONAL ECONOMIC GAS BURNER stands pre-eminent.

Testimonial from Samuel Clegg, Esq., Consulting Gas Engineer.  
I hereby certify, that I have examined the National Economic Gas Burners of Messrs. Paul and Co., London, and find the consumption per hour of cubic feet of gas, at a pressure of 5-10th of an inch to be respectively—No. 0, 4 feet; No. 1, 6 feet; and No. 2, 10 ft.; at the same time the illuminating power is very great, the light remarkably steady, with freedom from smoke or smell of gas, with great purity of light; and, in my opinion, they are decidedly the best patent gas burners in use. SAMUEL CLEGG.

London, Nov. 9, 1848.  
May be seen burning, and can be tested by an experimental meter, at the office of PAUL & CO., Gas Engineers and General Gas Fitters, No. 43, Skinner-street, Snow-hill, London.—A detailed Description and Diagram, with testimonials at length, forwarded, post-free, on application.

A curious and melancholy fact connected with the electric light has just been communicated to us. A gentleman near Waltham Abbey, experimenting with the electric light a few days ago, having an incised wound on his left hand, touched the conductor—a copper wire, and shortly afterwards experienced an irritation, which immediately spread in inflammation to the arm. The arm became immensely swollen, and large tumours appeared all over the body and limbs. Eminent surgeons from London have been in attendance; some of the tumours were opened, and every means resorted to for the purpose of checking the poison, but without avail. We learn that the unfortunate patient lies without the least hope of recovery.

GOLD IN BENGAL.—In remarking on the mineral riches which it would be found were indigenous to the soil of our possessions in the East Indies, if properly sought after, a correspondent of a morning paper states, that the extensive and varied field of Hindoostan has been, up to the present hour, but very superficially and insufficiently explored in all that relates to geological researches—that, in addition to diamonds, topazes, garnets, and other precious stones, which are found numerous in the rivers and mountain streams, gold is to be met with without a doubt. Being one day on the margin of a river, he saw the sands glitter in the sunbeams, and, taking home a handful, he carefully washed it, and found it to contain a portion of gold, and he believes if it was properly worked would yield a high profit. The writer desires no profit from having discovered gold in the rivers of Bengal; he declares the fact stubbornly and steadily, that gold is to be met with, in no mean quantity, in that presidency, and could describe the spot, so that it could easily be found.

THE BRITON FERRY COLLIERIES.—A powerful pumping engine, which has been erected at this winning, was completed on Friday, the 9th inst., and started very satisfactorily. Exertions are now being made to commence immediate mining operations on a large scale, by which employment will be given to numerous men now out of work. The coal is bituminous, and has been proved to be of excellent quality, producing an unusual proportion of large coal, being a description in which the supply at this port has been very limited, and is therefore much in request. These collieries belong to the Neath Abbey Company, who contemplate a considerable extension of the works at no distant period.

CWM AVON COPPER WORKS.—The Governor and Company of the Bank of England are reducing the number of men employed in this concern; many off the colliers were discharged on Saturday last, and still further reductions, we are told, are in contemplation.

THE RED JACKET COPPER COMPANY, NEAR NEATH.—This new copper company is said to be principally composed of members of the Society of Friends, resident in London.

DARLEY MAIN COLLIERY.—The subscription for the widows and orphans of the persons who lost their lives in the Darley Main pit, now reaches, we are informed, near 150 0l.

THE NEW MILL.—We are glad to hear that the starting of this splendid and stupendous mass of machinery, the largest of its kind in the kingdom, recently erected by the proprietors of the Tredgar Iron-Works, will shortly take place, and be celebrated by a public demonstration.—Monmouthshire Merlin.

CALIFORNIA.—The packet-ship, *Sheridan*, arrived at Liverpool last night, bringing advices from America four days later than received by last steamer. The California gold mania continued to absorb as much attention as ever. The quantity obtained was fully as great as formerly reported, and the quality is said to be very fine.—The iron-ship *Antelope* sailed from the Mersey this morning for San Francisco, with a cargo valued at between 40,000l. and 50,000l., and a large number of passengers. The *Antelope* has also taken out the framings and plates for an iron warehouse, to be erected by mechanics who have taken passage in her.

Accounts from Bordeaux speak of an increased business during the last month, promoted by a revival of confidence, and also from the excitement occasioned by the gold discoveries in California. Letters from Valparaiso particularly mentioned the high prices obtained for recent shipments of French wines, and hence the markets were altogether better.

A deputation from the Irish Waste Land Improvement Society, had an interview, yesterday, with Sir George Grey, at the Home Office. The deputation consisted of Sir T. Burke, Mr. Ormsby Gore, Mr. St. George, Mr. O'Flaherty, Mr. Heathcote, Col. Robinson, and Mr. Staples.

The gold bullion held by the Irish banks for the last month, has been increased by 49,000l.—*Limerick Chronicle*.

GUTTA PERCHA.—The vessel *Belhaven*, arrived from Singapore, has brought the large quantity of 10,792 blocks and 39 packages of this peculiar article of merchandise, which is now made serviceable for so many purposes, in addition to those to which it was at first considered capable of being appropriated, including picture-frames, and an immense variety of articles for domestic and ornamental use.

CORK STEAM-SHIP COMPANY.—A meeting of the shareholders of the above company was held at their offices, on the 13th inst. It appeared that, at the establishment of the company, they incurred a debt for new vessels of 80,000l. Since then they subscribed 96,000l.; paid off the 80,000l.; had property to the amount of 170,000l.; had a fund to meet the deterioration of vessels of 24,000l.; to meet casualties, 30,000l.; besides a sum of 15,000l., allocated for insurance purposes. The company being out of debt in the property to the amount of 170,000l., and a surplus fund of 69,000l., an increased dividend of 7 per cent. was declared.

WAR STEAMERS FOR GERMANY.—The steam-ships *Acadia* and *Britannia*, so celebrated in the British and North-American Company's mail service between Liverpool and the United States, have recently been purchased from that company by one of the German Governments. They are now in the Coburg Dock, Liverpool, undergoing the necessary alterations to their being converted into efficient war steamers. The passengers' saloon, on the main deck, has been cleared off, so that they will be flush fore and aft. Their armament will be of the heaviest description.

THE GEOLOGICAL SOCIETY.—The members of this society celebrated their anniversary last evening, at the Thatched House Tavern.—Sir Charles Lyell, the president for the ensuing year, occupied the chair, and was supported by upwards of 70 members and friends of the society. Upon the chairman's right sat his Grace the Archbishop of Canterbury and Sir Robert Peel, Bart., and upon his left were his Excellency the Belgian Minister and the Marquis of Breda. The following were also present at the banquet:—The Earl of Enniskillen, the Dean of Westminster, Sir Roderick Murchison, Sir Henry De la Beche, Major-General Sir W. Morison, Major-General Sir Charles Pasley, Sir E. Ryan, Sir Frankland Lewis, Sir Charles Lemon, M.P., Mr. Loch, M.P., Mr. Headlam, M.P., Mr. Bunbury, M.P., Col. Reid, M.P., Capt. Lyall, Professors Ramsay, Henslow, Playfair, Owen, Sedgwick, and numerous other gentlemen. Among the speakers of the evening were the Lord Primate, whose name was coupled with the British Museum, and Sir Robert Peel, to whom Sir Charles Lyell particularly referred in connection with the Hunterian Museum, and the newly-founded Museum of Practical Geology.

MOST WONDERFUL DISCOVERY.—A German zoologist, named Brandt, has published some microscopical observations upon the remains of food found by him in the cavities of the teeth of an antediluvian rhinoceros, of which the Museum of St. Petersburg possesses an entire cranium, covered with the skin. From these researches it would appear that these animals fed upon the leaves and fruits of fir trees, and that they had never lived in a tropical climate.

#### CORNISH STEAM-ENGINES.

The number of pumping-engines reported for the month of Jan. is 35—the quantity of coal consumed being 2318 tons, lifting, in the aggregate, 50,000,000 tons of water 19 fathoms high—the average duty of the whole is, therefore, 51,000,000 lbs. lifted 1 foot high by the consumption of a bushel of coal.—The following have exceeded the average:—

Mines.	Engines.	Length of stroke in feet.	Load in pounds.	Load per sq. inch on piston.	Strokes per min.	Consumption of coal per bush.	Million lbs. lifted 1 foot by consump. of 1 bush. coal.	Millions lifted 1 ft. by 1 cwt. of coal.
Great Work	Leeds's 60-in.	9-0	41,830	11-3	10-0	2069	58-4	66
Carn Brea	78-in.	9-0	83,166	13-7	9-6	2276	54-3	65
Poldice	80-in.	10-0	76,017	9-3	9-9	3098	63-9	64
South Frances	75-in.	11-0	33,908	6-3	7-1	1860	86-5	67
United Mines	Taylor's 85-in.	11-0	97,108	15-3	7-0	3493	78-9	94
Ditto	Cardozo's 90-in.	9-0	99,468	13-7	8-6	4830	86-4	67
Ditto	Elden's 80-in.	9-0	13,631	16-0	7-6	482	69-4	83
Ditto	Loam's 85-in.	10-0	65,330	11-8	8-6	4158	54-1	64
Ditto	Hocking's 85-in.	10-0	98,242	15-3	8-2	4922	38-0	69
Tywarhaye.	Gardiner's 80-in.	10-0	69,527	11-0	7-4	3168	59-6	63
East Wh. Rose	Michell's 70-in.	10-0	64,925	14-9	4-7	1340	71-8	86

[Abstract from Browne's Cornish Engine Reporter, from Dec. 30, 1848, to Jan. 20, 1849.]

PUMPING-ENGINES.  
Number reported.....24  
Average load per square inch on the piston, in lbs.....13-6  
Average number of strokes per minute.....5-9  
Gallons of water drawn per minute.....4978  
Average duty of 16 engines—being million lbs. lifted 1 foot high, by the consumption of 1 cwt. of coal.....60-4  
Actual horse-power employed per minute.....965-2  
Average consumption of coal per horse-power per hour, in lbs.....4-1

ROTARY-ENGINES—WHIMS.  
Number reported.....19  
Number of kibbles drawn.....69,778  
Average depth of drawing, in fathoms.....132-3  
Average number of horse-whim kibbles drawn the average depth, by consuming 1 cwt. of coal.....47-0  
Average duty of 10 engines, as above.....16-4

STAMPS.  
Number reported.....7  
Average number of strokes per minute.....10-1  
Average duty of 4 engines, as above.....37-5  
Actual horse-power employed per minute.....103-9

PUMPING-ENGINES DOING HIGHEST DUTY.  
Par Consols.....60-inch single.....Millions 96-1  
Fowey Consols.....60-inch single.....92-0  
Great Polgoth.....80-inch single.....85-1  
Callington.....60-inch single.....73-8  
Trelawny.....60-inch single.....73-1  
Tamar.....60-inch single.....68-6

WHIM-ENGINES.  
Fowey Consols.....22-inch double.....Millions 26-4  
Par Consols.....24 & 13-inch single combined.....24-1  
Fowey Consols.....22-inch double.....23-6  
Great Polgoth.....22-inch double.....14-5

STAMPING-ENGINES.  
Tamar.....30-inch single.....Millions 30-9  
Tincroft.....36-inch double.....36-0  
South Caradon.....26-inch single.....36-9

#### PRICE OF MATERIALS,

At the Hayle Copperhouse Foundry, on the 1st of February, 1849.

#### WROUGHT-IRON.

Plain cylindrical boilers, made of best plates, and best rivet iron.....	17s per cwt.
Whim kibbles, hammered iron.....	18s
" Ditto rolled.....	16s
Wine kibbles.....	8s each
Washing tubs.....	5s
Tapered rod-plates, hammered from scrap, 6 in. wide & under, in slabs.....	13s per cwt.
" 7 inches wide.....	14s
" 8 inches wide.....	15s
" 6 inches wide and under, fitted in length, and holes.....	16s
" bored, complete.....	17s
" with square holes, complete.....	17s
" 7 inches wide, holes bored, complete.....	17s
" ditto, square holes, complete.....	18s
" 8 inches wide, holes bored, complete.....	19s
" ditto, square holes, complete.....	19s
Miners' shovels.....	27s
Steel point ditto.....	47s
Valve iron.....	18s
Faggotted iron, single.....	11s
" Ditto double.....	12s
Axle arms and shear monials.....	13s
Grate plates, rough.....	13s
" Ditto middle hole cut.....	22s
" Ditto finished.....	26s
Furnace bottoms.....	30s
Flat thread tops and nuts.....	4d per lb.
Piston and air pump-rod, complete.....	8d to 1s p. lb.
Piston rings, turned.....	18s to 1s
Log-screws, rough.....	8d to 8d
Outer connection caps.....	2s per cwt.
Chain, made of best scrap iron—11-16 and 1/2 inch.....	31s
" " 1 inch.....	22s
" " 9-16 inch.....	22s 6d
" " 1/2 inch.....	23s
" " 7-16 inch.....	25s
" " 1 inch.....	25s
Best boiler-plate, Shropshire.....	11s
Kibble-plates, hammered.....	16s
" rolled.....	14s

[To be continued in next week's Mining Journal.]

#### NEW PATENTS.

J. Gillelt, gent., Trowbridge, Wilts, improvements in the manufacture of woollen cloth.  
G. E. Donisthorpe, Leeds, manufacturer, and J. Milnes, Bradford, York, for improvements in apparatus used for stopping steam-engines, and other first movers.  
J. Palmer, Camberwell Surrey, merchant, for improvements in matches, lighters, or similar articles, for lighting combustible bodies, in the mode or modes of making, and in machinery applicable thereto; also in matches and other boxes, and in machinery for manufacturing the same.  
W. Harris, Battersea, Surrey, shoemaker, a new or improved mode of preparing leather.  
W. Brewer, Malcom-place, Clapham, Surrey, and J. Smith, Southville, South Lambeth, Surrey, manufacturers, for certain improvements in the manufacture of paper and cardboard, and in producing watermarks thereon, and also in apparatus and machinery to be used for such purposes.  
C. Nickells, York-road, Lambeth, for improvements in the manufacture of woollen and other fabrics.  
E. Newton, Chancery-lane, civil engineer, for improvements in engines, or apparatus principally designed for pumping water.  
M. Townsend, Leicester, framework-knitter, and D. Moulden, of the same place, framework-knitter, for improvements in machinery for the manufacture of looped fabrics.  
E. Newton, Chancery lane, civil engineer, for improvements in machinery for winding and polishing rice and other grain, or seeds. (Being a communication.)  
E. Lord, Tordurden, Lancashire, machinist, for certain improvements in machinery, or apparatus applicable to the preparation of cotton, and other fibrous substances.  
A. Chandois, Faubourg du Temple, Paris, manufacturing chemist, for improvements in extracting and preparing the coloring matter from orchil.  
W. C. Day, Birmingham, Warwick, iron-founder and weighing-machine manufacturer, for improvements in machinery for weighing.  
H. L. Pattinson, Washington-house, Gateshead, Durham, chemical manufacturer, for improvements in manufacturing a certain compound, or certain compounds, of lead, and the application of a certain compound, or certain compounds, of lead to various useful purposes.  
R. F. Stargos, Birmingham, Warwick, Britannia-ware manufacturer, for improvements in the manufacture of candlesticks and lamp pillars.  
J. Erwood, Hoxton, Middlesex, paper-hanging manufacturer, for improvements in the manufacture of paper-hangings.

#### DESIGNS FOR ARTICLES OF UTILITY REGISTERED.

Joah Jackson, Birmingham, pen.  
William Biddle, East Temple Chambers, Whitechapel, self-lighting gas burner.  
Cambage and McNair, Greenock, apparatus for casting sugar-moulds.  
John Key, Wemyss Colliery, slot-cutting apparatus for file machinery.  
S. Newington, Keale-park, Kent, hand row hoe and cultivator.  
T. Tillock, Bond-street, haut-ton vesture.  
Bedington and Docker, Birmingham and London, double Argand lamp.  
E. Rawwell, Red Cross-square, London, scale pan for weighing and discharging coal.  
W. Winsor, Rathbone-place, Harding's lesson desk.  
E. and R. Levy, Manchester, improved boiler with internal flues.  
J. Little, Manchester, improved boiler with internal flues.  
S. Clifton, Paddington, cold draught preventer.  
J. N. Marshall, Bristol, heated air-propeller.  
H. L. Marshall and S. Bayless, Oxford-street, a juster to be applied to braces and fastenings for waistcoats, trousers, drawers, belts, &c.  
Scholfield and Sons, Birmingham, a gamella, or gold-washer.  
T. H. and G. F. Bushbridge, East Haling, Kent, dandy roller for paper-making.  
J. Clark, Wilton Hall, Staffordshire, safety spring-loom.—*Mechanics Magazine*.

#### NEW ROAD LEVEL.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—In an advertisement inserted in your last week's number, there appears a statement to the effect that Messrs. Robert and David Musket have worked this colliery. Messrs. R. and D. Musket never worked this colliery; and, since the dissolution of their partnership, Mr. R. Musket has never worked it; therefore, as far as the latter individual is concerned, the statement is untrue, and calculated to mislead the public.  
ROBERT MUSKET.  
Colford, Feb. 13.  
P.S. I have, moreover, a good legal opinion, that the alleged claim for rent, as put forth in this advertisement, against Messrs. R. and D. Musket, is founded neither in law nor equity.



## Current Prices of Stocks, Shares, &amp; Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.	
Bank Stock, 7 per Cent., 106 5/8	Belgian, 4 1/2 per Cent., 52
3 per Cent. Reduced Ann., 94 1/2	Dutch, 2 1/2 per Cent., 50 1/2
3 per Cent. Consols Ann., 94 1/2	Brassian, 5 per Cent., 55
2 1/2 per Cent. Ann., 95 1/2	Chilian, 3 per Cent., 55
Long Annulities, 9 1/2	Mexican 5 per Cent., 25 1/2
India Stock, 10 1/2 per Cent., 245 7/8	Russian, 5 per Cent., 109
3 per Cent. Consols for Acc. 94 1/2	Spanish, 5 per Cent., 18 1/2
Eschequer Bills, 1000l. 2d. 46 5/8 pm.	Ditto 3 per Cent., 29 1/2

**MINES.**—A fair proportion of business has been transacted during the week, and shares have generally maintained former quotations—indeed, in some instances, the supply has not proved equal to the demand. The advance in both tin and copper, as well as the improvement in Consols, contribute considerably to the increase of business in the mining share market, especially in our dividend and leading mines. Shares in Devon Great Consols, and several in East Wheal Rose Mine, changed hands.

The business done in South Tamar Consols, and Heignton Down shares, have been large, and at advanced prices; the recent discoveries in the respective mines have induced buyers. Bargains in East Tamar have also been effected. Condurow is stated to have improved; whilst the leading mines in the west continue to maintain the position represented last week. Treviskey and Barriar have been done, and are still in requisition.

Kingstee and Bedford shares have been in request, and several transactions done at our present quotations. The reported discoveries have caused this inquiry. Wheal Vincent shares have been done at quoted prices, and more are in course of negotiation. In Birch Tor an important discovery has been made, and several shares have been done.

Another advance has taken place on tin, and on fine copper 1/2d. per lb.

Shares in the following mines have been done during the week:—Devon Great Consols, East Wheal Rose, Treviskey and Barriar, West Caradon, Trevelyan, Condurow, Trebarn, Mary Ann, Stray Park, West Tolgus, Kingstee and Bedford, South Tamar, Tincroft, East Tamar, Herodsfoot, Birch Tor, Caradon Wheal Hooper, Heignton Downs, &c.

At the Caradon Copper meeting, on the 7th, the accounts from Aug. to Sept. showed a balance of 54l. 17s. 10d. against the company. A call of 1l. per share, being deemed necessary, was made, although arrears of calls, amounting to 190l., are due from the adventurers. The report is highly satisfactory, and with requisite and efficient machinery, and energetic management, there is little doubt of this mine being made a paying one within the present year.

The first general meeting of the Kingstee and Bedford Company was held at Exeter on Monday, the 12th inst. The reports of the mining agents (who were present) afforded a detailed and explanatory statement of present prospects and future proceedings, and were received with evident satisfaction. The large stores of rich lead ore, recently raised from a newly-discovered and productive lode, were viewed with gratification by the crowded meeting. The shares which remained unappropriated are to be sold to the shareholders at a premium, which will give ample funds to meet present liabilities—consequently a call of 5s. per share only was made instead of 10s., contemplated before the late important discoveries.

At the Wheal Vincent meeting a call of 2s. 6d. per share was deemed requisite. The statement of accounts showed a balance of 51l. against the mine for the months of Nov. and Dec. The agent's report was considered sufficiently encouraging to induce the proprietors to continue their energy.

At Wheal Sophia meeting the balance sheet presented a credit of 12l. 5s. in favour of the mine, with arrears of calls amounting to 245l. 6s. The report of Capt. Carpenter (who had been called on to inspect the mine) was favourable to the continuance of operations. A call of 10s. per share was made.

At South Wheal Trevelyan meeting, a call of 10s. per share was deemed necessary. The balance in the pursers' hands amounted to 244l. 10s., from which January cost 85l., and 128l., is to be deducted, the latter sum being the amount agreed to be paid for the damage done to some land. The reports of three agents, fully capable, from their long practical experience, to advise and consult on future operations, having been obtained, a committee was formed for carrying the same into operation.

At the Herodsfoot meeting the statement of accounts showed a balance of 577l. 12s. 8d. in favour of the company; October and November sales amounted to 1866l. 6s. 2d. The mine being now free from liabilities, may be considered in a position of paying regular dividends.

In foreign mines, the transactions have been principally confined to Barossa Range, St. John del Rey, United Mexican, and Australian; in the former, a large number of shares have changed hands.

The following arrival of specie has taken place since our last:—The Peninsular and Oriental steamer, *Madrid*, arrived at Southampton, on Thursday morning, having on freight 28 packages of specie.

**HULL, THURSDAY.**—We have had a brisk market for shares during the week, and although they have not advanced even step with Consols, confidence is evidently increasing, not only among investors, but what is much more favourable to a further rise, among speculators. In consequence of the announcement that the York and Newcastle will, in all probability, only pay 6 per cent. instead of the 7 per cent. anticipated, that stock has gone flat. East Anglians are also duller, in consequence of the proposed further issue of preference shares.

## RAILWAY TRAFFIC RETURNS.

Name of Railway.	Length. Rwy.	Present actual cost.	Price per share.	Div. 1848.	Traffic Returns. 1849.	1848.
Belfast and Ballymena.....	37 1/2	—	20 1/2	p.c.	£378	—
Birmingham, Lancashire, & Chesh.	19	997,284	87	p.c.	718	608
Bolton, Blackburn, & West Yorksh.	14	—	52	—	351	—
Caledonian.....	141	3,993,732	23 1/2	—	3824	—
Chester and Holyhead.....	84	3,014,602	22 1/2	—	4116	—
Dublin and Drogheda.....	35 1/2	774,575	33	—	701	657
Dublin and Kingstown.....	7 1/2	395,915	—	—	682	609
Dundee, Perth, & Aberdeen Jan.	67 1/2	244,334	26	8	892	650
East Anglian (Lynn to Ely).....	67 1/2	1,167,104	36 1/2	—	702	430
East Lancashire.....	44	1,733,915	19 1/2	5	1888	1052
Eastern Counties and Norfolk.....	307	10,364,505	11 1/2	4	13949	12543
Eastern Union.....	51 1/2	1,522,332	12 1/2	—	1144	1082
Edinburgh and Glasgow.....	57 1/2	2,556,889	42 1/2	6	3189	3274
Edinburgh and Northern.....	78	1,722,213	12 1/2	4	1640	612
Glasgow, Paisley, & Ayr.....	102 1/2	2,286,353	34 1/2	4	2368	1684
Glasgow, Paisley, & Greenock.....	102 1/2	2,286,353	34 1/2	4	2368	1684
Gr. Northern & East Lancashire.....	110	—	10 1/2	5	1606	—
Gr. Southern & Western, Ireland.....	131	2,444,897	33 1/2	4	3493	1754
Great Western.....	305 1/2	11,608,815	102	7	17716	16839
Kendal and Windermere.....	10 1/2	174,600	25 1/2	—	101	91
Lancaster and Carlisle.....	70	1,476,102	52 1/2	4	1746	1179
Lancashire and Yorkshire.....	172 1/2	8,242,628	75 1/2	6	10892	8088
London and North Western.....	432	25,077,942	109 1/2	7	37562	34178
London and Blackwall.....	4	1,599,675	54 1/2	1 1/2	571	686
London, Brighton, & South Coast.....	102 1/2	6,284,812	35 1/2	6	6363	6999
London and South Western.....	215	7,490,688	41 1/2	6	7750	6576
Londonderry and Enniskillen.....	144	154,643	16	—	135	—
Manchester, Sheffield, & Lincolnsh.	91 1/2	4,651,093	47 1/2	5	2817	1990
Midland Great Western (Irish).....	47 1/2	14,042,340	92 1/2	6	18702	17444
Midland Great Western (Irish).....	47 1/2	14,042,340	92 1/2	6	18702	17444
North British (Lynn to Ely).....	67 1/2	2,163,450	16 1/2	5	2321	1716
Scottish Central.....	45 1/2	1,245,496	23 1/2	—	873	—
Shrewsbury and Chester.....	47 1/2	780,272	20 1/2	5	1394	504
South Devon.....	55 1/2	1,789,351	16	—	1390	683
South Eastern.....	165 1/2	7,389,322	25 1/2	6	6625	6364
Taff Vale.....	38	820,056	—	6 1/2	1863	1541
Ulster.....	88	684,684	45 1/2	—	756	583
Whitehaven & Lancaster.....	12 1/2	109,139	10 1/2	3	1893	2595
York, Newcastle, & Berwick.....	269	5,038,255	29	8	11715	9843
York and North Midland.....	255 1/2	4,179,309	54 1/2	8	6139	5654

## FOREIGN RAILWAYS.

Aires.	Companies.	Paid.	Div. p. cent.	Price.
23,500 Australasia.....	—	£40	—	£23 2 1/2
20,000 British North American.....	—	50	—	41 40 1/2
20,000 Colonial.....	—	25	—	5
— Commercial of London.....	—	20	—	19
4,000 Ionian State.....	—	25	—	24 25
20,000 London Joint-Stock.....	—	10	—	14 1/2
20,000 London and Westminster.....	—	30	—	24
10,000 National Provincial of England.....	—	35	—	35 1/2
20,000 National of Ireland.....	—	25 1/2	—	17 1/2
20,000 Provincial of Ireland.....	—	25	—	40 40 1/2
4,000 Ditto New.....	—	10	—	15
— South Australia.....	—	25 1/2	—	23 1/2
20,000 Union of Australia.....	—	25	—	25
10,000 Ditto New.....	—	25	—	24 1/2
60,000 Union of London.....	—	16	—	19

## JOINT-STOCK BANKS.

Aires.	Companies.	Paid.	Div. p. cent.	Price.
23,500 Australasia.....	—	£40	—	£23 2 1/2
20,000 British North American.....	—	50	—	41 40 1/2
20,000 Colonial.....	—	25	—	5
— Commercial of London.....	—	20	—	19
4,000 Ionian State.....	—	25	—	24 25
20,000 London Joint-Stock.....	—	10	—	14 1/2
20,000 London and Westminster.....	—	30	—	24
10,000 National Provincial of England.....	—	35	—	35 1/2
20,000 National of Ireland.....	—	25 1/2	—	17 1/2
20,000 Provincial of Ireland.....	—	25	—	40 40 1/2
4,000 Ditto New.....	—	10	—	15
— South Australia.....	—	25 1/2	—	23 1/2
20,000 Union of Australia.....	—	25	—	25
10,000 Ditto New.....	—	25	—	24 1/2
60,000 Union of London.....	—	16	—	19

## PRICES OF MINING SHARES.

BRITISH MINES.		Paid.		Price.	
Shares.	Company.	Paid.	Price.	Shares.	Company.
10000 Aberystwyth.....	—	8 1/2	—	9000 South Tamar.....	—
512 Albert Consols.....	—	1 1/2	2 1/2	128 South Caradon.....	—
10000 Alfred Consols.....	—	8 1/2	—	1100 South Dolcoath.....	—
10000 Antimony & Silver-Lead.....	—	5 1/2	—	256 St. Friendsh. Wh. Ann.....	—
10000 Ashburton United Mines.....	—	8 1/2	—	256 South Molton.....	—
10000 Balmuccia Consols.....	—	9 1/2	—	256 South Tolgus.....	—
10000 Barrowdown.....	—	25 1/2	—	256 South Trevelyan.....	—
10000 Barristown.....	—	6 1/2	—	9000 South Wales Mining Co.....	—
4000 Bedford.....	—	2 1/2	—	128 South Wheal Bassett.....	—
1244 Birch Tor Tin Mine.....	—	9 1/2	—	124 South Wh. Frances.....	—
8000 Bisanavon.....	—	50 1/2	—	256 South Wh. Josiah.....	—
100 Botallack.....	—	182 1/2	—	1000 South Wh. Maria.....	—
120 Brewer.....	—	12 1/2	—	10000 Southern & Western, Irish.....	—
10000 British Iron, New, regd.....	—	10 1/2	—	512 West Fowey Consols.....	—
128 Buckle Consols.....	—	52 1/2	—	256 St. Austell Consols.....	—
10000 Callington.....	—	20 1/2	—	94 St. Ives Consols.....	—
10000 Camborne Consols.....	—	5 1/2	—	128 St. Michael Peakivel.....	—
20000 Cameron's Steam Coal.....	—	6 1/2	—	999 St. Minver Consols.....	—
256 Caradon Copper Mine.....	—	9 1/2	—	1000 Stray Park.....	—
256 Caradon Mines.....	—	22 1/2	—	1000 Tavy Consols.....	—
256 Caradon Mines.....	—	22 1/2	—	6000 Tincroft.....	—
256 Caradon Mines.....	—	22 1/2	—	1000 Tin Vale.....	—
10000 Carr Breva.....	—	15 1/2	—	58 Tokenbury.....	—
30000 Cartmel Consols.....	—	12 1/2	—	256 Tollpetherwin.....	—
112 Charlston.....	—	220 1/2	—	256 Tregodan.....	—
512 Coalfield Hill.....	—	1 1/2	—	256 Trevelyan.....	—
5000 Coalbawn.....	—	34 1/2	—	5000 Trevelyan Consols.....	—
128 Comfort.....	—	20 1/2	—	3000 Trevelyan.....	—
256 Confort.....	—	20 1/2	—	120 Trevelyan.....	—
256 Crook's Kitchen.....	—	14 1/2	—	120 Trevelyan and Barriar.....	—
10000 Coombe Valley Quarry.....	—	34 1/2	—	256 Trevelyan.....	—
6500 Cornwall Mining Co.....	—	2 1/2	—	1000 United Mines.....	—
30000 Cornwall New Mining.....	—	1 1/2	—	256 Wellington Mines.....	—
10000 Copper Bottom.....	—	14 1/2	—	128 West Buller.....	—
10000 Cosheen.....	—	42 1/2	—	256 West Caradon.....	—
212 Craddock Moor.....	—	120 1/2	—	256 West Fowey Consols.....	—
10000 Cragg Wh. Hooper.....	—	21 1/2	—	256 West Providence.....	—
5000 Cribbar Mine.....	—	12 1/2	—	200 West Seton.....	—
10000 Cwm Eryn.....	—	3 1/2	—	— West of Scotland Iron Co.....	—
10000 D. Prior & Bucknall.....	—	8 1/2	—	120 West Trevelyan.....	—
7100 Derwent.....	—	84 1/2	—	256 West United Hills.....	—
840 Devon Great Consols.....	—	230 1/2	—	512 West Wheal Frances.....	—
10000 Duirduro.....	—	30 1/2	—	256 Wheal Friendship.....	—
2560 Drake Walls.....	—	5 1/2	—	8725 West Wheal Jewel.....	—
10000 Durham County Coal.....	—	45 1/2	—	256 West Wheal Tolgus.....	—
30000 Dyffrynwm.....	—	10 1/2	—	256 West Wheal Treasury.....	—
512 East Alveston.....	—	54 1/2	—	1024 Whiddon Mines.....	—
2500 East Birch Tor.....	—	3 1/2	—	5200 Wicklow Copper.....	—
112 East Caradon.....	—	47 1/2	—	107 Wheal Adams.....	—
9048 East Crowndale.....	—	47 1/2	—	1000 Wheal Agar.....	—
10000 East Comb Silver-Lead.....	—	64 1/2	—	256 Wheal Albert.....	—
128 East Pool.....	—	15 1/2	—	240 Wheal Anderton.....	—
9000 East Tamar Consols.....	—	4 1/2	—	128 Wheal Ann.....	—
— East Wheal Albert.....	—	1 1/2	—	512 Wheal Anna Maria.....	—
94 East Wheal Crofty.....	—	125 1/2	—	1024 Wheal Ash.....	—
1024 East Wheal Fortune.....	—	2 1/2	—	120 Wheal Bal.....	—
128 East Wheal Rose.....	—	50 1/2	—	256 Wheal Benny.....	—
— East of Scotland Iron Co.....	—	5 1/2	—	256 Wheal Blencowe.....	—
128 East Wheal Seton.....	—	14 1/2	—	256 Wheal Buckets.....	—
128 East Wheal Seton.....	—	14 1/2	—	256 Wheal Calstock.....	—
1280 Escalier Lli.....	—	14 1/2	—	1024 Wheal Courtsey.....	—
256 Exmoor Wh. Eliza.....	—	6 1/2	—	256 Wheal Fortescue.....	—
512 Fowey Consols.....	—	40 1/2	—	388 Wheal Franco.....	—
1024 Fredd Lwydd Mines.....	—	14 1/2	—	128 Wheal Harriet.....	—
6000 Gadair.....	—	2 1/2	—	100 Wheal Henry.....	—
4000 Gen. Mining Co. for Irel.....	—	14 1/2	—	1024 Wheal Lawrence.....	—
256 Gonaonema.....	—	44 1/2	—	112 Wheal Margaret.....	—
10000 Gwernabaw.....	—	16 1/2	—	512 Wheal Mary Ann.....	—
10000 Great Consols.....	—	1000 1/2	—	208 Wheal Mary Consols.....	—
256 Great Newnham Moor.....	—	11 1/2	—	— Wheal Penhale.....	—
512 Gr. Wh. Rough Tor Con.....	—	15 1/2	—	210 Wheal Prospect.....	—
1200 Growa Slate Company.....	—	5 1/2	—	120 Wheal Reeth.....	—
256 Gwincar Consols.....	—	7 1/2	—	128 Wheal Rose.....	—
6000 Heignton Down Con.....	—	14 1/2	—	59 Wheal Seton.....	—
256 Herodsfoot.....	—	27 1/2	—	100 Wheal Sisters.....	—
10000 Hibernia.....	—	124 1/2	—	494 Wheal Sophia.....	—
239 Hobbs Hill.....	—	6 1/2	—	128 Wheal Sporne.....	—
10000 Holmshush.....	—	22 1/2	—	128 Wheal St. Ann.....	—
1024 Kingstee and Bedford.....	—	4 1/2	—	550 Wheal Trescott.....	—
827 Kirkcubrightshire.....	—	84 1/2	—	256 Wheal Trevelyan.....	—
3048 Lamherose Wh. Maria.....	—	13 1/2	—	256 Wh. Tremaine (St. Ervan).....	—
252 Lanarth Consols.....	—	10 1/2	—	1024 Wheal Tremayne.....	—
128 Lelant Consols.....	—	90 1/2	—	92 Wheal Tryfan.....	—



## NOTICES TO CORRESPONDENTS.

We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses; not that their communications should, consequently, be noticed, but as an earnest to their good faith.

"Investigator" is right in one of his corrections, and in error in the others. The quantity of ore sold in the last quarter, under the head of "Cuba" in our statement, was, as there given, 1746 tons, of the value of 16,054. 11s. The difference of 9 tons in quantity, and 104. 17s. 6d. in amount, which our correspondents state to exist, he will find explained, he will refer to our Number of the 7th October, where he will see a sale under the head of "Cuba" of that exact quantity and amount. Two small errors have crept into the computed produce of copper. "Investigator's" statement has been referred to the party who framed our Table; and, on revising his calculations, he discovers an error in the sale of the 15th Oct. of 6 tons 3 cwt., and in that of the 25th Dec. of 3 tons 5 cwt. The first of these he takes upon himself, as an arithmetical miscalculation. The last falls upon our shoulders, as a typographical error; 110 tons of ore sold on that day, really of the produce of 144 per cent, was erroneously printed 111 per cent. Hence the difference. Had our friend, who framed the table with much industry, had access to the original Swansea printed list (which he had not), the error would not have been made.

"T. G." (Davy Halmes).—In Germany, when the stuff is in the state you describe, about 50 lbs. is melted with every fresh charge; the same could be done here in a reverberatory furnace; but in large quantities, the bottom would be broken—indeed, it would not be practicable on a sand bottom, in consequence of the affinity of the iron for the silica. It will be most difficult to take a fair sample; your only course, we apprehend, would be to pay for its being assayed, and this would be a most expensive and troublesome operation. Can you get a piece analysed, and inform us of the component parts?

PREVENTION OF ACCIDENTS IN COLLIERIES.—We have received a communication from Mr. Heath, C.E., and mining surveyor, of Hanley, Staffordshire, in which he requests the attention of the public to a new method of regulating the currents of air in the roadways of collieries, by fixing, in proper positions, strong wrought-iron, or wood, framing, having doors fixed thereto, to open upwards, or on one side only, as most desirable. Also, a plan for preventing the spread, after an explosion, of the carbonic acid, by stoppings of brick or stone, erected elliptically in the drifts; and a plan for preventing injury from the breaking of the shaft, and what Mr. Heath has forwarded, is, in our opinion, totally unworkable; but if he will send a clear description of any of his plans, we shall be happy to lay them before the public, through the medium of our columns.

"A. Z." (Pool, Dorset).—The specimen of mineral in the clay slate is arsenical iron pyrites; an arseniated sulphure of iron, commonly called in the mining districts "white mudstone." Its component parts generally range as follows:—Arsenic, 48.1; iron, 36.5; sulphur, 15.4=100 parts. It is from this ore that the white oxide of arsenic is principally obtained, and artificial opuntia is also prepared from it. The other specimen, in which our correspondent does not know what the shining scales are, is a true appearance of mica slate, composed of quartz and mica—the "shining scales," being the latter, while the smaller specimens are coloured with oxide of iron; but we are not aware that it is of the least industrial value. The component parts of mica usually are—Silica, 47.25; alumina, 22.0; oxide of iron, 14.5; oxide of manganese, 1.75; potash, 14.5=100 parts. It is found in the north of Europe, particularly in Siberia, in large plates, even up to 24 yards square, and is used as a substitute for glass.

Mr. J. Carr (Pentonville).—We have received our correspondent's communication, in which he complains of illiberality in our remarks on his work on *Railway Locomotion and Steam Navigation*, in last week's *Mining Journal*, and that, without cause, we accused him of mercenary motives. With respect to the latter charge, our observation will be found to be—his threat. To say the least of it, he has the appearance of mercenary motives. And as to the general charge of illiberality, we can assure Mr. Carr, that it is ever with regret we feel called upon to make observations derogatory to the character of any work, or which might tend to injure its author; while it gives us sincere pleasure to be enabled to speak in favourable terms of any publication sent us for review. On these occasions, however, the path of duty is broad and plain; and, without favour or affection, we pass such remarks upon volumes under consideration as we honestly believe them to merit. In the remarks referred to, we see no reason to withdraw a single expression; while it is with pleasure we acknowledge the receipt of a paper, on Water Wheels, from Mr. Carr (intended for insertion in our next Journal), and which, we have no doubt, will be read with much interest by our mechanical readers, as entering fully into the details of an interesting and important subject.

"A Traveller" (Leeds).—Gold has been found in small quantities, both in Norway and Sweden; but so inconsiderable, as not to be worth the labour of working. At Eldsvid, in the province of Agderhus, the Danish Government, the latter end of the last century, opened a mine, and erected amalgamation works. In the course of a few years the expenditure was so heavy, and the returns so small, that they abandoned it.

MONMOUTHSHIRE AND GLAMORGANSHIRE BANKING COMPANY.—Sir: Will some of your correspondents oblige me with answers to the following queries respecting this company?—The number of shares originally granted, and to what amount? The amount paid up on each share at the present time? The amount of the dividends usually paid, and the time of payment, and the present value of shares in the market?—A Subscriber: Forest of Dean, Feb. 12.

"Chemicals" (Bristol).—Phosphorus kept under water in the dark becomes covered with a white opaque crust, which contains no water, but consists of pure phosphorus, and, when heated above 104° Fahrenheit, melts again, with loss of weight, to the state of ordinary phosphorus.

T. Elliot (Sunderland).—Desires to inspect the Asturian coal-field, and inquires the best and easiest route?—If you can bear the sea voyage, there are vessels which every autumn start from Salcombe, in Devonshire, to Gijón, in the Asturias, to fetch nuts. They generally charge about 10s.; but are very small, and the accommodations very indifferent. Different vessels start at other times to other ports to Bilbao and San Sebastián; but this route is not to be recommended. If your prefer travelling overland, you take the ordinary conveyance from Paris to Bayonne; from thence there is a diligence through Vittoria to Burgos, which takes three days and two nights on the journey; from this place, another diligence takes you to Valladolid; from here there is a lumbering vehicle to Oviedo. It will be advisable here, instead of using this, which is constantly out of repair, to hire a mulester, who will provide you with three mules for about 400 reals (about 5s. sterling). You pass through Medina, Mayorga, Leon, and Mieres to Oviedo, in about five days. The accommodations on the road are not some parts very fine; but you must not expect anything like the comforts of an English inn. When at Oviedo, you are in the centre of the coal-field, and can decide where to make your excursions. The road is perfectly safe, and no dangers are to be apprehended from robbers. You might probably obtain some further information by writing to the office of the Asturian Mining Company, Astanfiria; they dispatch several vessels annually.

"A Miner" (Bristol).—In Germany, the mines are not worked on tribute; they are either paid by tithe, or the quantity of barrels of stuff they raise; this is subsequently dressed by other parties.

"Civis" (City).—California was first discovered by Sir Francis Drake; he anchored in the harbour of San Francisco the 17th of June, 1579. He gave the name of New Albion to the country, and took possession of it in the name of Queen Elizabeth. But no one being left there, and the British being occupied in colonizing the eastern coast of America, it was neglected. The Spaniards had previously touched there.

G. Seymour (Truro).—Duke Maximilian of Leuchtenberg (son-in-law of the Emperor), is the present director-general of the Russian mines; his predecessor was General Tchekhin, of the Engineers, a distinguished Caucasian officer.

"Copper" (Liskeard).—Phillips's *Mineralogy*, revised and corrected by Allan, is generally considered the best English work published; it is, likewise, the latest—cost 18s.

"W. D." (Tunstall).—There is no protection cheaper than by caveat (indeed, a cheaper one could scarcely be expected, since the cost is only one guinea); but the protection of a caveat, if it can be termed such, is but slight—it will merely prevent another from getting a patent, with a title similar to that of the caveat, and confer the right of opposing the grant of such patent; every objection, however, involves additional charges.

"L. B." (Wolverhampton).—Large quantities of chromate of iron are exported from America; from it is derived a great abundance of this mineral in the Scandinavian Peninsula. From it is extracted chromic acid, which, in combination with lead, forms the bright and beautiful pigment denominated chrome. Native chromate of lead is a rare mineral; its principal locality is Siberia.

"C" (Piddington).—The paper on the Geology of Biscay arrived too late for insertion.

H. Wilson (City).—The communication is not applicable for our Journal; you should send it to the *Horticultural Magazine*, or some of the papers devoted to gardening.

"T. S." (Glasgow).—Coal and lead ore have been found at Spitzbergen; but as there is constant snow, and the coast is never free from ice, it would be found most difficult to work them. A small cargo of the coal was tried some years since, but found to be of an inferior quality; this probably, however, arose from the long exposure to the air, as the greatest portion of it was gathered on the beach.

Thomas Ellis, jun. (Tredya Iron-Works), writes—"I have a pulley 4 ft. diameter, drawing one 14 in., at the rate of 900 revolutions; but I require to reverse the smaller, therefore must cross the straps. What is the best method to prevent the rubbing?" We think the friction might be materially decreased, by placing a revolving spindle between the two straps on fine bearings, top and bottom, which, in its revolutions, will prevent the reverse action of the band cutting.

"An Operative" (Cardigan).—There is no law to prevent any one making gas for his own consumption. A small apparatus could be constructed at a cheap rate, and the saving effected would be very great. Probably, if such was erected on your premises, you would have to pay a larger premium on your insurance.

"B. H. T." (Lawton, Cheshire).—We shall be happy to receive the sketches, and a more detailed description of both the apparatus for blowing blast, and the railway break, invented by Mr. Thomas.

"A Young Miner" (North Wales).—A simple rock is one unmixed homogeneous substance, whatever be its constituent elementary parts—as limestone, roofing slate, serpentine, &c. But compound rocks are composed of different mineral substances, either cemented by another mineral substance—as sandstones, puddingstones, &c.; or aggregated, which implies an intimate union of the parts without a cement—as granite, &c.

"Cinabala."—The address of Mr. Alexander Forbes, the proprietor of the quicksilver mines in California, is—Messrs. Barron, Forbes, and Co., merchants, Tepe, in the State of Jalisco, Mexico.

GALVANIZING WHISTLER.—A description of the patent of Mr. J. C. Roberts, of Holywell, has already appeared in the *Mining Journal*.

"B. S." (Regent's-park).—"Kilias" is a local Cornish term, for what geologists designate "clay-slate" and "grauwacke slate rocks." The tin and copper veins of Cornwall abound in the kilias and the contiguous granite.

"Electricity" (Liverpool).—The electrolytic process is applicable to copper plate engravings, medals, stereotype plates, ornaments, and blocks for printing call and paper hangings.

"A Constant Reader" (Paris).—A French metre contains 39.37 English inches.

"A Shareholder" (Salisbury).—We have received a report of the proceedings and wasteful expenditure carried on in the property in which you are an adventurer; but until we obtain more authentic and less prejudiced information, we shall decline taking any notice. If a meeting of the most influential parties were called, according to your account, much scandal would be avoided. You had better address yourself to them.

MAPS OF THE GEOLOGICAL SURVEY.—Sir: Finding, with much satisfaction, that the maps of the Ordnance Survey of Great Britain are now sold at 2s. each, and the quarter sheets at 6d. each, I naturally expected to find that the maps of the Geological Survey, which were coloured on the Ordnance copies, were sold at a relative reduction. I find, however, that such is not the case, and the public have still to pay the extraordinary price of 15s., 16s., and even 19s. for many of the sheets, and not one of them is reduced in price. Surely these maps, so useful to many, ought to be now sold at such a price as will cover the cost of colouring and no more, which would reduce the price to about

3s. or 6s. for each sheet. By drawing attention to this, I am certain you will materially serve your geological and agricultural readers.—Glasgow.

Received.—"E. G." (Cardiff).—"G. S." (Plymouth).

THE MINING JOURNAL.  
Railway and Commercial Gazette.

LONDON, FEBRUARY 17, 1849.

The *Mining Journal* is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

The happy and encouraging improvement of the market, in everything that relates to mining and mineral property, is now far too obvious to need any extended comment. This process of improvement and revival has been steadily making head for several months past; and except, perhaps, in the particular instance of copper, and, consequently, in the mines producing that important metal, we doubt if it is really desirable that prices should ascend much higher than their present quotations; notwithstanding, we believe they will go further up yet. They may not for a month or two, as we are disposed to think, reach their culminating point; for, with the demand which a fast-rallying commerce is daily sending in upon the market, with wheat at 45s. per quarter, and the Three per Cent. Consols up to 94, it is hardly supposable that so important a class of articles as the home-raised metals can continue at their present figures. In the world of commerce, however, as in the physical world, there is between action and reaction an intimate relation and affinity. If prices are forced up rapidly and purposely, the method of their rising will but accelerate their fall. It is true that commerce, like the ocean, has its tides, but the less they are interfered with the less labour will be wasted, and the more fully the two great elements will accomplish their beneficial purposes. We want the markets to be preserved from frequent and artificial fluctuations, and also that mining, in all its branches, should put on the character of a settled business rather than of an irregular speculation. To adventurers and to practical miners, to all and to each, we may confidently say—"there's a good time coming"—a time when those who have commercially suffered from the operation of the new law, or from the disturbed state of the markets, continental and insular—a time, we repeat it, when their just success and their fair remuneration will be placed on a more permanent footing.

In some few passing remarks on the subject of the dreadful explosion at the DARLEY MAIN COLLIERY, near Barnsley, which we felt it our duty to make in our last Number, we expressed our fullest expectation that the verdict would be "Accidental Death," from the absence of everything in the shape of evidence, by which a more serious result could be brought home to any one or more individuals. The termination of the inquiry, and the verdict given, has fully met our anticipations; while the special nature of the verdict, and the recommendations contained therein, will, we think, prove the most powerful movement towards the establishment of something like system in the working and ventilation of our coal mines, that has ever yet been made, since public attention has been called to the dire and wholesale immolation of human life, which has so long been suffered to overwhelm whole districts with misery and despair. During the inquiry which has been made in the case under notice, no certain data could be arrived at as to the actual and immediate cause of the calamity—not one soul in the vicinity of the explosion being left to tell the tale. There can, however, judging from appearances and the known habits of the colliers, be little doubt but that it arose from the carrying a naked candle, or an uncovered lamp, into the goaves, where an accumulation of gas had taken place; and the great object in any improvement in the ventilation of any particular mine, must be directed to secure a current of pure air, of sufficient magnitude and velocity to scour those worked-out portions, as well as all the roads and workings, and keep them free from any accumulation of carburetted hydrogen. On the inquiries which have attended all the great explosions within the last 20 years—the Jarrow, Hetton, Risca, and numerous others—the greatest sympathy was, on every occasion, shown for the sufferers; searching investigations took place, committees sat, and Parliamentary commissions were appointed; in every case, however, the first excitement being past, no recommendations were carried out in practice; and whatever suggestions, and however promising for good, might have been made, they appear to have been shortly lost sight of, and operations relapsed into the previous loose and dangerous practices. We trust, however, the inquest on the 75 victims to the Darley Main explosion will be productive of better things; there has been a step in the right direction, and a clear and unmistakable expression of opinion on this occasion, which we never witnessed before; the coroner, the Government commissioners, the witnesses, who are highly respectable coal viewers and agents, and the jury, to a man, expressed a firm conviction, that the time had now arrived when the lives of hundreds of our fellow-creatures must no longer be left to depend on the reckless conduct of themselves, or the prejudices or cupidity of underground viewers, or owners.

In their verdict the jury express their desire, "that Mr. BADGER, the coroner, report to Sir George Grey, and that he make known to her Majesty's Government, that they think it advisable that a scientific and practical person be appointed occasionally to inspect the collieries in this district, see that there is proper ventilation, and hear any complaints by the workpeople employed therein." The important question now only arises, as to how is this desirable system of inspection to be carried out, in such manner as not to cause an unjust interference with the sacred rights of private property, and there is among the most intelligent and practical men a great diversity of opinion, as to the best means to effect the object; while there is, doubtless, a strong repugnance among mine proprietors and managers against all Government interference, who allege that the force of public opinion is sufficient to induce owners to adopt those improvements which are imperatively required. Experience, however, has proved the contrary of this, and that something more compulsory is necessary, to induce the adoption of the necessary means of safety and the defraying the necessary expenses. Our intelligent correspondent, Mr. JOSHUA RICHARDSON, C.E., of Neath, in his work, *On the Prevention of Accidents in Mines*, strongly advocates a wholesome system of Government interference, and, as we have on former occasions expressed, we cordially agree with his views on the subject. He most truly observes—

"There are few men who are so much exposed to bodily injuries and violent deaths as the colliers and miners of the United Kingdom. In other dangerous employments the Legislature has enforced the adoption of all available means for the prevention of accidents, and a strict observance of such measures as have been deemed requisite to ensure the safety, and promote the health of the workmen. The courageous and industrious body of men whose daily occupations are in the bowels of the earth, in the midst of darkness and many dangers, and who are secluded from the observations of all disinterested parties, have not received from the Legislature any measures of a protective or remedial nature at all commensurate with their necessities. On the occurrence of any great calamity in our collieries, such as an explosion or an inundation, by which numerous lives have been lost, on the subsidence of the excitement, the subject has been lost sight of, until another accident happens, equally destructive to human life, and again attracts the public attention. In the fatal errors which have been made to devise remedies for these great and constantly recurring evils, some valuable information has been collected by Parliamentary and other committees which were appointed for the purpose of instituting inquiries into the subject, yet, with the exceptions of the invention of the safety-lamp, and the law prohibiting boys under 10 years of age, and females, from being employed in mines, I am not aware that any other practical good has resulted from them. As a class the miners are particularly entitled to every amount of protection that can be given to them by the Legislature. Coal, the principal product of their labour, is essential to our national existence, for without a plentiful supply of good fuel, the steam-engine would become comparatively useless, and our manufactures and commerce paralysed. The safety of the pitmen is important, too, as an economical consideration, as well as on the score of humanity. On the security of the capital invested in mines, the price of the coal to the consumer, in a great measure, depends. Scarcely an accident can happen in a

colliery that inflicts death on the miner, but what imposes, at the same time, a colossal expense on the proprietor. To cover the loss thus incurred, he is obliged to demand a higher price for his coal than he would do were the risks less. The interests of all parties, therefore, are promoted by the avoidance of accidents, and the adoption, or enforcement, of any measures which would effect this, would be beneficial, not only to the proprietors and workmen, but to the consumers also."

We think there can now be scarcely two opinions on the subject, as to the necessity of some salutary measures being immediately adopted; and we trust, on the recommendation already noticed, Sir George Grey will not suffer a month to pass without having well considered the subject with his colleagues, and be prepared with a bill to be brought forward for the consideration of the several members, interested or otherwise, of both houses of the Legislature.

Since writing the above, we are happy to announce that the subject was brought before the House of Commons yesterday afternoon. In answer to a question from Mr. CATLEY, whether the SECRETARY OF STATE was prepared to recommend any mode for the regulation and inspection of mines, Sir GEORGE GREY replied, that he had placed Mr. TREMMER, who was an inspector under the Act relating to the employment of children in mines, in communication with various persons largely interested in mining operations in this country, and in communication with large establishments on the continent, and that gentleman had furnished him with an interesting report, which would be laid before the House in a few days. The regulations which it recommended were too strict and minute to lead him to hope that they could be adopted in this country, but, at the same time, he thought it would be desirable that the Government should have power to inspect mines where the safety of the persons working in them was endangered, and to compel owners to adopt some measures for their protection. The subject was still under the consideration of the Government, but the difficulty was to provide an efficient system of superintendence, without involving a large amount of expenditure.

We find that M. LE MOITZ has published in French an explanation of his system, discussing *seriatim* the details, which, having reached us late, we must delay communicating to our readers till our next Number. However, we may say that it will add little to our present means of forming a judgment, until we shall have the facility of examining the battery of which it treats. The data it contains might be received with some reliance from a FARADAY or a JACOBI; but we mean no disparagement to M. LE MOITZ, when we decline to concede to him the right of controlling our opinions, whilst he ties up our hands by his patent of privilege, from examining the invention he brings before us. To do so would be just as simple as to credit as realities the enchantments of the Wizard of the North. Far from us be the desire to forestall the time at which M. LE MOITZ may deem his plans mature; nevertheless, we cannot avoid again demanding, why it is that our leading professors have not been consulted in a case so exclusively and properly dependant on their adjudication? and, if consulted, why are they silent? We do not allude especially to M. LE MOITZ's battery; we extend our inquiry to his predecessor. Is it that an unfavourable response is contemplated? Possibly so; for, unless either or both of the systems of batteries comprised in the patents be more economic in producing the required effects than that employed at the Hanover-square Rooms, it is very probable that, in further mooted the question, the party will, as the lawyers say, "take nothing by his motion; otherwise, why this delay? It cannot be to wait for the specification of ALLMAN, who has had nothing to grasp at but the rejected or neglected objects of the others. Moreover, if we wait for the exhaustion of specifications bearing on electric apparatus, "parts of which may be applicable to electric light," we shall never arrive at *finality* before all patience shall be lost, or some other wonder supersede this marvel of the day. Perhaps the inventors mistake their position, and consider that it is not their duty to appeal to any other intelligence than their own. Be it so, as far as they are concerned; yet there are others interested, who ought, and must, make such appeal, and for that purpose they should be placed in a position to do so.

Let us have no misunderstanding as to the right to begin. Let us put the alternatives—it is either the duty of the patentees, or of the scientific world, to test the apparatus submitted to us. It would seem that the inventors decline the former; therefore we must accept, however involuntarily, the latter. Such seems to be the view of M. LE MOITZ, which is by far more rational than the silence of his adversary—we speak not of Mr. ALLMAN, whose modest seclusion is really quite unaccountable, if not suspicious in this scene of excitement.

We may be asked by Mr. STAITE—What does it concern the public how our proceedings are regulated, or at what time we bring forward our apparatus? We answer, it does concern the public a great deal—we know of one of the first houses in St. Petersburg, charged with a project for forming a gas company, that has suspended the operation in consequence of the promulgated assertion, that the electric light was so far advanced as to supplant gas. The city of Munich was on the point of establishing, for the first time, a manufactory of gas, to dispense with its dim and dripping oil-lamps. The intention, we believe, is relinquished. Other cities, similarly in arrears of municipal progress, have, no doubt, received the startling announcement, which has disturbed our own sedate propriety, with equal surprise; the efforts of civic authorities to improve their internal condition, when deficient in the important requisite of artificial light, must be everywhere paralyzed; and last, though not least, the peace and repose of our dear and valued gas monopolies imperatively call for a speedy solution of our enigmatic relations with the patentees. Therefore we say that we must and shall know something more of the pretension of Mr. STAITE and Mr. LE MOITZ, for we are not bound to listen to the excuse that they are not ready. If they were not prepared, they should not have appeared before us. Those stage effects could be prematurely resorted to only from unworthy motives—a supposition we cannot entertain. Consequently, if these gentlemen do not speak out, we shall do so for them.

To except M. LE MOITZ from the charge of taciturnity, is only simple justice; but there is something further wanted from him. Grant it, that M. LE MOITZ declares the electric light (the subject of his invention) to be of limited application, and incapable of disturbing the present disposition of gas-light; notwithstanding, we must beg M. LE MOITZ's pardon in doubting this proposition, because if the light be applicable in the instances he enumerates, it is clearly a question of time alone to find mechanical appliances and appropriate materials for extending its use beyond the range he gives it. It is needless to recapitulate analogous cases to prove this—they are too numerous and familiar. Suffice it then to say, that we shall require at the hands of M. LE MOITZ, as well as of Mr. STAITE, a prompt and candid examination of their respective projects.

We will presently advance with Mr. LE MOITZ, who has wisely taken the initiative to announce his sentiments in the *memoire* before us, as soon as we have the elements to satisfy our scientific associates. To Mr. STAITE we recommend an early initiation of this proceeding of his rival "*fas est ab hosti doceri*." If he pretend that his lecture at the Western Institute is a substitute, we deny it; and if he persist, we shall revert to it and tell him our reasons. It is one thing to give an *ad captandum* popular illustration, where all dissent is deprecated or hushed—the literary world know how and why—far different is the deliberate discussion of a scientific subject through the medium of the press. In expectation that we should have, ere now, been invited to such debate, we have abstained from the consideration of its question, lest we should excite a prejudice against it when it is fairly brought forward. Even now we do not desire to make more haste than good speed. Should any sufficient reason be shown for procrastination, we will wait for the patentees' own good time; but, we trust that the cause to be assigned may not be ALLMAN's specification, for, we say before hand, we will not accept it; as we have said, that would lead to interminable delays. Already a new and fourth inventor is in the field, Mr. FLENCHE, who has applied for a patent, in terms nearly the same as ALLMAN'S. When we say a fourth patent, we have to admit an error in giving to Mr. STAITE the claim of priority, for we find there were several patents antecedent to that of STAITE and GREENER.

The subject seems more prolific than we supposed, when it appeared to us that Mr. STAITE's patent had monopolized the whole ground. At present the stranger is, at the best, passing from its state of embryo. The accession to the series of electro-galvanic improvements, of which its symmetrical throes forwarn us, is likely to be precursor to an augmentation of a numerous progeny, though by no means united happy family. It will bear out our predictions of an extensive rivalry, by which the public must



finally profit; therefore, it is that we counsel a watchful and just surveillance over the conflict of those who come forward to vindicate their pretensions to superiority.

Glad are we to find that proceedings in Chancery, the law courts, and that of the Insolvent Debtors, lead to the object so much desired—that of determining what is, and what is not, the law. The question has been oft put in our columns, as regards the Cost-book System; while we have good reason to hope that the one and other will be settled ere long, and that the blundering piece of machinery, called the Joint Stock Companies' Registration Act, will be exploded, and some rule of common sense and understanding laid down, whereby the public may know what are the intentions of the legislative enactment, without being compelled to resort to solicitors and counsel, whose main object, while they advocate the cause of their clients, is naturally "to keep the game alive."

We last week entered on the case of the Wheel Lovell Mining Company, and have now to refer to a case, which came on in the Vice-Chancellor's Court, on Saturday last, *WYNNE v. PRICE*, which affords additional evidence of the necessity of something being done.

In the one case, we find that a party holding 100 shares in a railway, and who was, perhaps, the allottee, receiving his letter of allotment, or scrip, sold his shares through a broker, receiving the payment thereon which was duly made by the purchaser, but who, however, it would appear, refused to register such shares, and by that means, avoided, in accordance with his ideas, any responsibility, for, although he had possessed himself of the interest held by the vendor, he was desirous of removing from off his own shoulders all liabilities on the party from whom he had acquired his interest, no legal transfer, or recognition, having been made. Mr. PRICE (the defendant) then being sick of his bargain, cried off, and, having refused to register the company, had no other resource than to proceed against the plaintiff, the consequence of which was an appeal to VICE-CHANCELLOR KNIGHT BRUCE, to have his opinion upon the matter. Accordingly, a bill was filed by Mr. WYNNE (the seller), and the case came on for hearing on the 5th inst., when the defendant contended, not that he did not possess the shares, but that that they were not the identical shares held by Mr. WYNNE, availing himself of one of those additional loopholes which allotment letters and scrip certificates afford of avoiding law as well as justice; he (the defendant), moreover, contending that he was not bound to register his name. His Honour, the VICE-CHANCELLOR, soon settled the business by decreeing that he was liable.

Before leaving this subject, we must needs say a word or two by way of comment. In the first place, this transaction took place in Sept., 1845—a period which, we doubt not, is in the recollection of most of our readers, who noted the railway mania and panic which immediately followed; and here we would observe that, in our opinion, no transaction should be allowed of trafficking in allotment letters, or scrip shares; indeed, it would be good pay for an informer to look after this, and refer the magistrate to the Joint Stock Companies' Registration Act, whereby penalties are incurred, which, however, if he can understand, he will, doubtless, be considered as a civic *salon*. If we are right in our notion, the shares so sold were either scrip shares, or an allotment letter. Now, that did not bind the purchaser to sign the deed, although, by implication, it could only be so construed—inasmuch that he could possess no interest, unless he took upon himself the obligations entered into by the vendor; while the latter, on parting with his interest, should, most undoubtedly, have been relieved from all further responsibility; the precaution, however, appears not to have been taken, and hence the present proceedings.

Our contemporaries, the *Times* and *Morning Post*, have, in their City article stated, that the result was hailed with satisfaction by the members of the Stock Exchange—this may well be, as many will thus be enabled to throw off responsibilities which might otherwise fall upon them. We cannot help thinking that VICE-CHANCELLOR KNIGHT BRUCE is somewhat innocent of the business of the Stock Exchange department, and although it may be that the defendant, after a lapse of 8½ years, should be called on, yet the report, as we have it before us, must be considered as anything but conclusive. It, however, whether right or wrong, is a harbinger of what may be expected—that of attention being directed to a subject which so loudly calls for the interference of the Legislature.

Another case presents itself, which came before the Insolvent Debtors' Court, being the first wherein the Joint Stock Companies' Act was brought under the attention of the learned commissioners. The case in itself was simple, but a brief narration may be useful to the many. The insolvents applied for shares, secured them, paid deposit, and signed the deed; this happened some years since, or, what may possibly be the case, for the report before is somewhat indistinct, and not having heard anything more of the returns to be made, or the premiums to be realised, he, quiet soul, thought that the bubble had burst, and that, whatever expectations he might have entertained, the matter had been brought to a close. However, to his cost, he found such was not the case, for although some years had expired, he had been served with a rule from the Court of Common Pleas, rendering him liable as a shareholder under the Joint Stock Companies' Act, on a judgment obtained by an engineer for services rendered to the defunct Company, and having been taken in execution, he applied to the court for relief. The debts of the company were stated at upwards of 20000.

Here, then, we have another illustration of the Joint Stock Companies' Act, and the way it works. That something must be done, becomes more and more manifest every day; and we believe we shall have occasion, in our next Number, to direct attention to the fast and loose game practised by companies, professedly working on the Cost-book System. A change must take place; honest and straightforward dealing, will, in the end, destroy the private jobbing and interested conduct of parties of no principle, or who only consider that *principal* is their interest, no matter how it is acquired.

#### ANALYSIS OF THE GOLD FROM CALIFORNIA.

BY T. H. HENRY, F.R.S.

This gold, which was kindly furnished me by Mr. Tennant, of the Strand, was for the most part in flattened grains, or spangles, varying in weight from 1-20th of a grain to 2 or 3 grains, with occasional pieces weighing as much as 20 to 80 grains. The specific gravity was 19.96. It contained, in 110 parts:—

Gold	88.75
Silver	8.88
Copper	0.88
Siliceous residue	1.40=99.98

#### IMPROVEMENTS IN THE MANUFACTURE OF IRON.

(Specification of patent granted to Samuel Leas, Park-bridge, Lancaster, iron merchant, for certain improvements in the manufacture of malleable iron.)—*Mechanics' Magazine*.

These improvements refer—1st, to the piling, and 2d, to the rolling of malleable iron.—1. Instead of piling the flat bars horizontally, as has hitherto been customary, the outside of the fagot is composed of flat bars, dovetailed or overlapped, and placed at right angles to each other. The inside of the fagot is made out of pieces of scrap or other iron, which are arranged vertically, or vertically and horizontally, whereby the bar, when rolled out into shape, will be of greater strength and less liable to laminate than those made after the old method.—2. The improved rolling mill consists of a main shaft, driven from any prime mover, on which is geared a spur wheel, whereby the grooved rollers are driven. The first of the series of grooves in the rollers is open at the side, so as to admit of projection from the frame entering partially into this groove. The bar is first passed through the second groove, and the indentation formed in the side; it is then caused to pass edgewise through the first groove, whereby the bar is reduced to the proper size, while the projection, taking into the indentation, prevents it being compressed out of shape. The bar is then passed through the rest of the grooves, and finished. The form of the grooves may be varied so as to give any desired form to the iron, and the bottom roller made to revolve in an opposite direction to the top one. Above the rollers is a frame, which is made to travel backwards and forwards by means of suitable gearing driven from a pulley on the main shaft, and which carries a rod, to which is suspended the bar to be rolled.

Claims.—1. The mode of piling or fagoting the flat bars.—2. The rolling mill, in which the indentation is maintained by means of the lateral projection.—3. The mode of causing the rollers to revolve in opposite directions.—4. The arrangement of gearing for driving and reversing the frame from which the bar to be rolled is suspended.

#### DAVIES' ROTARY ENGINE.

In the *Mining Journal* of Dec. 2, 1848, we noticed the specification of a rotary engine, patented by Mr. J. Davies, of Birmingham, and we have since received a report from Mr. William Dredge, C.E., being a description of an engine at work at the manufactory of Messrs. Edleston and Williams, George-street, Birmingham, and also an experimental inquiry into the principle of that engine, with a view to ascertain its relative power and useful effect. The majority of practical engineers and individuals who have carefully studied the properties and capabilities of the steam-engine, have long been decidedly in favour of the reciprocating over the rotary principle, under whatever form it has hitherto been attempted to be introduced; many go so far as to say that the attempt to apply steam as a motive power to a body in rotative motion, in which the cubic contents of the steam-way must be continually varying, is bad in principle, and Mr. Dredge, in his introduction, confesses it was with some misgiving that he went to see it, and at the time felt little doubt in his own mind, but that his report would be anything but favourable; for, in common with many engineers, he had a strong opinion against rotary engines; the prejudice was, however, much shaken after seeing the engine at work, and subsequent experiments entirely dispelled it. In his observations on the general principles of rotary engines, Mr. Dredge remarks, that notwithstanding the prevalent opinion against their practicability, there is not, in his judgment, sufficient reason for supposing that the rotary engine will not ultimately be made to succeed; for, unless we are violating a natural physical law by constraining steam to move in a circular channel, the failures have arisen more from imperfection in the mechanical detail, than in the principle of the engine, and these imperfections the skill of the artisan may reasonably be expected, ere long, to overcome.

Having, as before stated, given the specification in a former Number, we now proceed at once to record some of Mr. Dredge's experiments. The engine has been at work at Messrs. Edleston and Williams's needle manufactory upwards of 12 months, employed in turning wire blocks, pointing and heading machines, lathes, &c., when Mr. Dredge saw it, the work was about equal to 10-horse power, the pressure of steam in the boiler 18 lbs. to the inch, and that the coal consumed was 86 lbs. per hour, 1 lb. of which evaporated 9.8 cubic feet of water. The coal was the ordinary Staffordshire engine slack, at 5s. per ton; this, however, he reduced to the price of Welsh coal, and found the quantity which would be consumed 64.47 lbs. per hour. The engine made 70 revolutions per minute; the quantity of steam used by the engine per hour is 8542 cubic feet, at a density of 18 lbs. per square inch steam, occupies a volume of 830 times as great as the volume of water from which it is raised. Hence 9.8 x 830 = 8134 cubic feet, is the volume which 9.8 cubic feet of water would occupy, when raised into steam, at a pressure of 18 lbs. per square inch, but the space it actually filled in the cylinder was 8542 feet, therefore the steam, after leaving the boiler, must have expanded from 8134 to 8542 ft., and the real pressure must have been 17.14 lbs. per square inch on the piston. Taking the area of the pistons, the distance through which the steam acts, and the expansion after withdrawing the slide, Mr. Dredge gives the actual value of the engine 11.18 horse-power. In order satisfactorily to ascertain the amount of force absolutely expended, a friction break was applied, and the pressure of steam in the boiler, and the speed of the engine, were kept the same as they were during the day, while driving the machinery in the manufactory, and the result was, that the friction break showed a power of 10.2 horses actually given off in doing useful work. From this it appears that about 1-horse power was absorbed in waste, condensation, friction, &c., of the engine, or that the useful mechanical effect given out by the engine was only about 10 per cent. less than the full mechanical power due to the steam. Mr. Dredge afterwards examined another engine made from the same patterns as Messrs. Edleston's, but which had been employed upwards of 2½ years in turning lathes, &c.; he caused this to be taken to pieces, and he describes the abrasure of the rubbing surfaces as not more than an equally well-made reciprocating engine would have sustained in the same time; in fact, it was in as good condition as when first started. From the result of the experiments, Mr. Dredge arrives at the following conclusions:—Economy in first cost; it occupies considerably less space than an ordinary engine of similar power would do; it possesses the advantage of having the rotary power generated upon the main shaft, or of communicating power by direct action; it does not consume so much fuel as a non-condensing reciprocating engine would do; the greater facility possessed by the engine of starting, stopping, or reversing on the instant. Upon the whole, Mr. Dredge looks with much interest to the time when this engine shall take its place in the market, when he hopes and expects the inventor will be rewarded for the ingenuity displayed.

SEPARATION OF GOLD FROM SILVER.—Much silver which is brought into the bullion market contains certain proportions of gold, and to separate which, by a process sufficiently economical to render the extraction profitable, had long been a great desideratum. This admixture of gold was particularly remarkable in the Bycote silver, which was sent to this country, to pay the Chinese war ransom, being extremely pure, with the exception of containing some portion of gold, which the Chinese have not learned how to extract. The method adopted here was by pouring the melted silver, while in a fluid state, into water, by which it becomes granulated, and offers a larger surface to the action of the acid afterwards employed; the granulated silver is then subjected to the action of sulphuric acid in a platinum retort, and exposed to a moderate heat; as the acid has no effect on gold, the silver alone is taken up as a liquid sulphate, and the gold is precipitated in the form of a brown powder. The liquid is decanted off, the precipitate washed, dried, melted, and cast into an ingot of gold. The liquid sulphate of silver is now replaced in the retort, and copper chippings introduced; this metal having a greater affinity for the acid than the silver, the latter is precipitated, and the liquor is transformed into sulphate of copper. The former is washed, dried, melted, and cast into ingots of silver; the sulphate of copper is evaporated and crystallised, and forms the mordant extensively used by dyers. Should the copper be required in a metallic state, nothing more is necessary than the introduction of scrap-iron, when the acid will combine with the iron, forming the sulphate of iron of commerce; the copper will be precipitated, and can be afterwards melted and cast.

PENN RECOA SLATE QUARRY, NEAR ASHBURTON, DEVON.—During the last week a number of additional men have been set to work at this extensive slate quarry. The adit tunnel is to be widened and improved, the rails to be relayed to proper gradients, under the superintendence of an engineer employed by the company. The depth of the quarry is 300 feet from the surface, the length of the tunnel 600 yards; the slate is considered infinitely superior to the Welsh slate, most of which is made for the London markets with great demand; and as soon as the improvements in the tunnel have been completed, almost any quantity of slate can be produced ready for the markets. We hope the respected adventurers will be amply remunerated for their spirited exertions.

NEW COAL-PIT VENTILATOR.—The frightful loss of life occasioned by the recent coal-pit explosion at Darley Main, has doubtless inspired many humane and scientific minds to investigate the causes of these awful calamities, with a view to lessen their recurrence, or, at least, to diminish the fearful loss of life which too frequently results from them. Actuated by such praiseworthy and philanthropic motives, our townsman, Dr. Dunn, has, we are glad to announce, succeeded in completing a very simple and apparently efficacious invention for the ventilation of coal-pits. We have been favoured with a view of Dr. Dunn's model, which we could describe in a few words if necessary, but which, for certain reasons, is to be kept secret for the present; not indeed that Dr. Dunn contemplates any pecuniary advantage from his invention, but he is desirous that other persons shall not be enabled to make a profit of that which is intended solely to benefit mankind at large. It is well known that in coal-pit explosions the great majority of the sufferers lose their lives by suffocation, only a few comparatively being killed by the mechanical force of the explosion. It is known, moreover, that one of the main causes of these explosions is the imperfect ventilation of the pits; and it is to remedy this defect that Dr. Dunn's contrivance has been invented. By this machine, it is calculated a constant and abundant stream of pure air, sufficient for any area, can be admitted into the pits. At present when a gale of wind occurs it sweeps over the mouths of the pits, and forms an eddy therein; this eddy does not extend more than 6 or 7 feet below the surface of the earth, and it has not a sufficiently spiratory motion either to allow of the mephitic air of the pits ascending or the purer air to descend—a circumstance which obviously hastens the danger, and increases the force of the explosions when they do occur. Dr. Dunn proposes by his simple contrivance to convey the atmospheric air directly to the bottom of the pits, and, if necessary, thence by an horizontal extension of the machine to other parts of the pit where it may be required. The advantages of such an invention are obvious, and when we add that it may be erected at an expense of 5l., we have no doubt the cheapness as well as the simplicity and efficiency of the invention will cause it to be universally adopted. The machine will shortly be tested at one of the neighbouring pits, and in the meantime, for the reasons above-mentioned, Dr. Dunn will secure his invention by registering it. We ought to state that Mr. Jarratt, one of the proprietors of Darley Main Colliery, has inspected the machine, and is very sanguine as to its success.—*Times*.

#### Original Correspondence.

##### THE BOVEY LIGNITE—FURTHER EXPERIMENTS.

SIR,—Since my letter on Bovey lignite, which appeared in your columns of the 3d inst., I have been making experiments to determine the relative proportions of fixed carbon, or coke, and of volatile and gaseous matter contained in this substance, so as to furnish a more accurate means of estimating its value, compared with ordinary coal. The brown variety, containing not more than 3 per cent. of ash, has been used throughout these experiments; the results are, therefore, far more favourable than an average specimen would afford. The coke, or charcoal, may be regarded as nearly corresponding to the amount obtainable on a large scale; whilst the water and tarry products would be less, and the gas rather more, than the proportions given below, from the latter having been passed through chloride of calcium, to render it anhydrous, in order to obtain its specific gravity by calculation from its volume and weight:—

	1st Experiment.	2d Exper.	3d Exper.	Average.
Coke, with ash	34.87	38.6	39.3	37.58
Water and tar	48.57	49.0	46.4	47.99
Gas	15.86	12.4	14.4	14.43
	100.00	100.0	100.0	100.00

If we deduct from the average amount of tar and water the average quantity of water, estimated in former experiments at 25 parts in 100, it leaves 22.99 per cent. of tarry products. The gas, collected over mercury, was examined for the usual constituents of coal-gas, and found to consist chiefly of a mixture of light carburetted hydrogen, carbonic acid, and sulphuretted hydrogen, with a trace only of olefiant gas; at a higher temperature, however, the proportion of the latter gas—the all-important one for illuminating purposes—would, I have no doubt, be much increased. The presence of sulphuretted hydrogen, indicated the existence of sulphur in the lignite, and a carefully-conducted experiment for its estimation gave 1.3 per cent.—the average quantity in coal being, according to Dr. Ure, from 2 to 5 per cent. This amount of sulphur is important, inasmuch as its comparative absence from lignite has been made a plea, if I mistake not, for recommending it so strongly in smelting iron.

From the above data, the following may be regarded as the average composition of the best, and I fear also the least, abundant variety of lignite. Two analyses of coal, by Dr. Thomson, are added for the sake of comparison:—

	Lignite.	Split Coal.	Caking Coal.
Charcoal	32.70	64.7	77.4
Ash	3.56	19.3	1.5
Tar, &c.	22.99		
Sulphur	1.30		
Water	25.00	35.2	22.6
Gas	14.45		
	100.00	109.4	101.5

On comparing the above, it is evident that the available matter for combustion does not amount, in the best lignite, to more than two-thirds of that in good coal; whilst in the clayey lignite it would be reduced to less than one-half. Were it not that my letter has been already extended to too great a length, I would add an analysis of the ash, and also some experiments on the gas obtained from the lignite.

FRANCIS RUDALL.  
Laboratory, University College, London, Feb. 15.

##### DARLEY MAIN COLLIERY EXPLOSION.

SIR,—As no doubt your next Number will contain the closing of the inquiry, and the verdict of the jury upon this lamentable catastrophe, I take leave to draw your attention, and that of your readers, to the present state of the question, in respect to Parliamentary interference. Since the year 1835, we have seen this subject handled by Members of Parliament, by public writers, by philanthropists of many grades, and practical persons, as well as by distinguished men of science; Sir H. de la Beche and other Government commissioners who acted with him, have reiterated their conviction that much good would be derived from Parliamentary interference in the saving of life, and improvement of our coal mines in general, yet no useful movement has been made by the Legislature, except the sending down of commissioners to give reports in regard to the causes which have produced so many afflicting and distressing calamities. Undoubtedly up to a recent period there *did* prevail amongst coalowners and viewers a feeling adverse to the adoption of Government inspection, which feeling was grounded chiefly upon the fear, that persons might be appointed to the office of inspectors who were not practically conversant with the requisite knowledge for conducting extensive collieries, and, therefore, might be induced to take such erroneous views of the subject, as to cause unnecessary expense to the owners, and annoyance to the practical persons concerned. There also existed great difference of opinion as to the extent of power which ought to be conferred upon such functionaries, lest an arbitrary abuse of their power might operate prejudicially in other respects—hence the studied silence of colliery viewers upon this important subject, and the difference of opinion amongst scientific men, as exhibited during the discussions at the Engineer's Society, in 1847, where gentlemen of high standing in the engineering world declared legislation upon coal mining management to be not only ungatory, but highly detrimental; however, we may now congratulate ourselves upon a new light having been thrown upon the subject during this inquiry, and the expressed opinions of a colliery viewer and coalowner of high standing—Mr. Nicholas Wood.

Mr. Wood's evidence goes to show—"That although the seam gave out very little gas, yet from a deficiency of general ventilation, further impeded by the prevailing high winds, and by the drawing of water in tubs at the upcast shaft, that the workings became charged with inflammable air, which gradually oozed out upon the unprotected lights of the workmen." From previous evidence, 6000 cubic feet per minute of air was stated to be the amount of the ventilation, whereas Mr. Wood states, "that 30,000 or 35,000 ought to have been the complement." He also mentions, "that if the ventilations could not have been improved, safety-lamps ought to have been used." His general evidence was corroborated by the other witnesses; and, upon the subject of Government interference, Mr. Wood says—"I have paid considerable attention to the desirableness and practicability of Government appointing underground inspectors of mines; I think now it is very desirable that Government should appoint underground inspectors. The great difficulty is, that of throwing the responsibility on commissioners, and removing it from the owners of collieries." These suggestions were adopted by the jury, who recommended that Sir George Grey should be solicited to influence the Ministry to appoint an inspector to look after the ventilation of the Yorkshire collieries.

At length, therefore, Sir, we have the accumulative recommendation of the Government Commissioners, supported and confirmed by a colliery viewer of eminence, himself an extensive coal-owner, that the subject calls for the immediate interference of her Majesty's Government, and the only doubt which seems to exist in the minds of Mr. Wood and others, is as to the effect of superseding, as it were, the responsibility of the coalowners. Now, with all due submission, I think these fears are groundless, inasmuch as since the appointment of Government inspectors for steam-boats, sailing-vessels, railways, cotton-mills, coaches, &c., we do not find that any unwholesome effect is experienced; but rather that the supervision and the suggestions of the inspectors aid and encourage the parties concerned to the adoption of measures of prevention, which might otherwise never occur to them, and such especially would I conceive be the case in the affairs of mines, provided persons were appointed who possessed a thorough knowledge of the subject.

For instance, had there been a duly qualified inspector in the Barnsley district, he would undoubtedly have come to the knowledge that the ventilation of the colliery was defective; he would, therefore, have ordered measures to be taken to accomplish the objects mentioned by Mr. Wood—viz., "either to improve the ventilation, or to work with safety-lamps;" and had such suggestions been adopted, the lives of the people, and the damage of the property, would have been saved.

But with regard to inspectors, it is not to be denied (and it is referred to in the evidence of Messrs. Trammere and Smyth), that there does prevail a feeling against inspectors being armed with compulsory powers. Now, in my humble opinion, without compulsory powers their mission would be ineffective—I mean as to the power of suspending such parts of a work as could not be carried on without imminent risk; for experience shows that persons managing collieries will not always lend a willing ear to the suggestions of others, whom they may think less acquainted with the mode suitable for that special colliery, than they the managers. Local customs will prevail, unless in some degree forced upon parties by authority; but where life is at stake, the power of suspension is imperative—for instance, the inspector suggests a change, the colliery owner objects; but it is agreed to call for a survey by indifferent viewers; but before all this can be ac-



published, weeks may elapse; and supposing lives should be lost in the meantime, how lamentably obvious would be the want of compulsory power? I am of opinion that inspectors would be naturally disinclined to act in a summary manner without stern necessity, lest, from an error in judgment, they might draw upon themselves the charge of rashness and precipitancy; but they would rather seek, by consultation and advice, to divide the responsibility between themselves and the authorised managers of collieries.

I will conclude by remarking that, since the subject is fairly before the public, it belongs to the respective mining populations to satisfy the Ministry that a system of Parliamentary legislation would be approved of, as likely to benefit the miners, not only in calamitous explosions, and the innumerable accidents to which they are exposed, but would also tend to furnish a useful medium, through which they might communicate with their employers, or with Government, so as to prevent those mischievous strikes, which too frequently demoralise and derange adopted systems in coal mining.

Other and important benefits might accrue from Parliamentary Legislation—such as statistics of population, powers of production, home consumption, and exportation of mining produce, &c.; but which would extend the subject far beyond the limits of this letter. I therefore confine these suggestions to the basis, as it were, of Parliamentary consideration—viz.: the saving of life, and the advancement of science in the working of mines.—MARR. DUNN, Mining Engineer: Newcastle-upon-Tyne, Feb. 14.

#### LOSS OF LIVES IN MINES.

SIR.—The recent lamentable colliery accidents have suggested to my mind a mode, whereby the repetition of such casualties may be materially prevented. From experiments just made with the gutta percha tubing, I find that its power of conducting sound is so extraordinary, that a conversation may be distinctly carried on through a tube of but 1 inch diameter, at the distance of even three-quarters of a mile. If, therefore, this tubing be carried down the shaft to the various workings of the mine, and the extremities furnished with a mouthpiece and whistle, an instant communication, in case of danger, may be made between every part of the mine and the men at the mouth of the shaft. Feeling that we enjoy many comforts, purchased at great risk to the poor miner, and that it is our duty to protect him as far as we can, I shall be glad if you will give insertion to this in your paper.—T. B. SMITHIES: *Bache's-terrace, City-road, Feb. 12.*

#### THE DARLEY MAIN COLLIERY EXPLOSION.

SIR.—As I expected, the verdict of the coroner's jury, in the case of the Darley Main Colliery explosion, was "Accidental death;" and yet, with singular inconsistency, it is coupled with a condemnation of the imperfect ventilation, altogether inadequate to the requirements of the mine. I mean here to record my positive conviction that there was, in the true and legitimate sense of that term, NO VENTILATION WHATSOEVER, OR, at any rate, it was worse than useless. The air was divided into two currents; further on, the current was again split, and then coalesced; currents were split and rejoined several times in their transit to the furnace and upcast-shaft. Moreover, the evidence of Mr. Nicholas Wood, Mr. Smyth, and Mr. Biram distinctly proclaim that the quantity of air was altogether inadequate, and even that quantity improperly managed.

Messrs. Wood, Biram, and Smyth seem to be skilful practical men, adequate to the task, and appear to have fearlessly done their duty. Mr. Smyth has recorded the following emphatic opinion—namely, that the quantity of air was insufficient, and that quantity ill applied. This is an honest verdict. With Mr. Smyth's sentiments, too, I entirely concur—viz.: that a good system of Government inspection might prevent accident. No doubt of it—the very thing I wish, and long for. It is not when "Death's doings" are consummated—it is a PREVENTIVE of the work of destruction we sincerely desire. I may now venture to ask what practical good could have reasonably been anticipated from Mr. Tremere's mission, who, by his own confession, had "nothing to do with the internal arrangement of mines!" We want intelligent practical men, like Messrs. Wood, Smyth, and Biram.—J. MURRAY: *Portland-place, Hull, Feb. 13.*

#### CALIFORNIAN GOLD.

SIR.—While I do not doubt that California is the very *Dorado* it is represented to be, we may well believe that, to use the quaint language of Van Helmont, "unworthy and simple labourers will be cunningly deluded." The other day, at an hotel, mine host showed me a specimen of "Californian gold," with all the grime imaginable. It was a small portion of a slaty sandstone, with a profusion of minute laminae of yellow mica! The trite proverb, "It is not all gold that glitters," was especially apposite in this case.—J. MURRAY: *Portland-place, Hull, Feb. 13.*

#### THE ANEROID.

SIR.—Mr. Dent has enhanced the obligations of the public by an interesting brochure, descriptive of that elegant and useful instrument, the aneroid, prefaced by many excellent and apposite remarks on the various forms of the barometer, and its varied applications, inclusive of the sphygmometer. There is one most important application of the aneroid, however, which has been inadvertently omitted—I mean its paramount importance in coal mines, where its premonitory indications will infallibly predicate an issue of hydro-carbonate, or "fire-damp." I strongly recommend the aneroid to the coal viewer, and to its premonitions he will do well to take heed.—J. MURRAY: *Portland-place, Hull, Feb. 13.*

#### MR. MUSHET'S DISCOVERIES.

SIR.—I hope that Mr. Anthony Hill will himself answer Mr. Robert Mushet's remarks upon Mr. Booker's speech at Swansea, published in your last paper; but fearing that he may not think it worth his notice, induces me to offer a few remarks. Mr. A. Hill never, that I can hear of, took credit to himself for the discovery of a method of working *bloomy cinders*; any furnace owner would be glad to have a heap of them, and find no difficulty in working them to advantage. But Mr. Hill did discover the method of working *refinery cinders*, and of converting them into good iron; and he is now the only ironmaster, I think, in Wales who works up the whole of the refinery cinders produced at his establishment, and whose iron (marked F.F.C.) is allowed to be the best in Wales. Now, if the method of making good iron out of cinders was discovered by Mr. Mushet, why did he not impart his knowledge to some other ironmasters?

Again, Mr. R. Mushet says that Mr. Hill took a patent for the use of lime in the puddling furnaces. This I never heard of, but it may be true; for Mr. David Mushet, in his papers "On Iron and Steel" (note 4, page 480, on experiments No. 6 of C. Clouet's process for making cast-steel out of bar-iron), writes—"The result of this experiment has since been beautifully developed by my friend, Mr. A. Hill, of Plymouth Works, who has shown clearly that, by a judicious application of flour lime in this process, any quantity of fibre may be communicated to bar-iron. So far, therefore, the elements of Mr. Hill's discovery may be traced to the result of this experiment. These are Mr. R. Mushet's father's words, and my impression is, that in these few lines he gives Mr. Hill the full credit of the discovery. Would Mr. R. Mushet give the credit of the invention of ships to the man who first discovered that an empty cockle-shell would float?—AN OLD (RETIRED) FURNACEMAN: *Dowla's, Merthyr Tydfil, Feb. 12.*

#### IRON MANUFACTURE.

SIR.—In your Journal of the 10th inst. is a letter from Mr. Mushet, commenting on a speech of Mr. Booker, at Swansea, in the latter part of which it is stated—"Mr. Booker seems to entertain very correct views of the rational improvements of the talented Mr. Yates. The large piles of masonry, called blast-furnaces, in Wales and elsewhere, seem calculated and constructed on purpose to consume power and fuel, not to make iron; yet such are the natural advantages of the South Wales mineral district, that it has hitherto been a matter of indifference whether each ton of pig-iron wastes 1, 2, or 3 tons of coal during its smelting. Mr. Yates is, in practice, about 100 years in advance of the present generation of smelters." Such observations from a speech of Mr. Booker, by the pen of a Mushet, are so far likely to mislead those not well experienced in the practical detail of the manufacture of iron, that I feel it a duty due to the public, and to ironmasters in particular, to endeavour to place this matter before your readers in a more correct point of view. Now, so far from Mr. Yates being a century in advance of the present generation of iron smelters, I have no hesitation in saying he has very lately been about twice that time behind them, for two of his new blast-furnaces are little more than those found in the wilds of Africa by the late Mungo Park; and the fact of their not answering is exhibited fully to the view of all travellers on the Midland Railway, when near Chesterfield, where they will see the last of those

blast-furnaces just now completed, built very like the best now at work (of about 60 years standing), and using similar materials in the same neighbourhood; and although Mr. Yates's is an entirely new work, the first engine and blowing-machine (a new rotatory one, blowing with fans, and made by himself) have already been removed, and replaced by an engine and blowing-machine, not quite in the most approved plan, as used by talented ironmakers of the present day.

Feb. 14.

AN IRONMAKER OF THE THIRD GENERATION.

#### GOLD IN CALIFORNIA, AND OTHER COUNTRIES.

SIR.—At the Society of Arts, on Wednesday evening last, Mr. Tennant, in the course of his interesting lecture, mentioned that iron pyrites did not scratch; I have generally heard that, when cut with a knife, it leaves a brown streak. I do not say this applies to all the varieties; but surely to some. Dr. Mantell, likewise, made an observation, that opal was a vegetable matter; I have always imagined it to be nearly all siliceous. I have heard of the wood opal (perhaps the doctor meant this); and it would be desirable to know what are its component parts. I believe this is not considered to belong to the opal variety; but is a species of bastard variety below the German "halb-opal." ONE SEEKING INFORMATION.

Charing-cross, Feb. 15.

#### EXPERIMENTS WITH CRADDOCK'S CONDENSER IN WATER.

SIR.—In a paper read by me at the meeting of Mechanical Engineers, held on the 13th of June last, which is published in the society's report of that meeting, and which also appeared in the *Mining Journal*, I stated, in reference to my mode of condensing in water, that 4 square feet of condensing surface was sufficient for 1-horse power, and that the weight of the condenser would not exceed 40 lbs. per horse-power. I am now in a position to state positively, because I have experimentally proved it, that with the steam used expansively, as I use it, 3 square feet of surface is sufficient to condense the quantity of steam which is equal to 1-horse power—that is, 33,000 lbs., lifted 1 ft. high per minute, whilst the weight of the condenser is under 6 lbs. per horse-power. The experiments alluded to have not only falsified the imaginary objections raised to the use of my condenser in water, but have shown how far short even my own anticipations of its recommendations were, to those it actually possesses. It has been urged, as an objection to its use in water, that to give it motion in so dense a fluid, would absorb much power. It has also been asserted, that such motion would not be superior to the stationary surface condenser. The following experiments are a decisive answer to these objections. The pressure of the steam in the first cylinder was 100 lbs. to the square inch, the vacuum 26 in., the work the engine was doing during the experiments, according to the brake, was 20-horse power, the condenser had 60 square feet of surface in it, and weighs 1 cwt.; it is fixed in a cistern, the cold water enters at the bottom, and the heated water flows off at the top of the cistern; the motion is that produced by the bell crank, but in the experiments the condenser was worked by one man by hand. This arrangement enabled me to test the influence of motion in the condenser, as to how far it increased its cooling effect, as when it remained still in the cistern, the effect of the cold water entering at the bottom, and the heated water flowing off at the top of the cistern, was similar to that of Mr. Hall's and other stationary surface condensers, in which the water, and not the condenser, is in motion. But, Sir, lest I trespass too much upon your space, I must confine myself to a statement of the results brought out by these experiments; but first observe, that the temperature in the air-pump is (as those who are practically acquainted with the working of the condensing engine know) the determining cause of the amount of vacuum obtainable. Bearing this in mind, the following facts are conclusive, as to the relative recommendations my mode of condensing possesses. The same quantity of condensing water being used by the three different condensers, for condensing the same weight of steam, the temperature in the air-pump will stand as follows—With my condenser in motion 115°, with the stationary surface condenser 130°, with the injection condenser 140°. The cause of this difference of temperature in the air pump obviously is the cold water flowing in at the bottom of the condenser, and the heated water flowing off at the top; whilst the exhaust steam from the engine comes in at the top of the condenser; and as it becomes condensed on its passage to the air-pump, it comes under the influence of the colder water entering at the bottom of the cistern; this cooling influence is much increased, as stated above, by the motion given to my condenser. The effect of motion in the condenser is so obvious, that the most sceptical must be convinced by their sense of feeling, as by discontinuing the motion of the condenser, the pipe which leads to the air-pump quickly becomes heated, but on again giving motion to the condenser it is as quickly cooled. In a future communication, it is my intention to give the result of some further experiments upon this matter. As I have before said, the experiments I have already made exhibit advantages much beyond what I had anticipated—so much so, that if it was not that the more I demonstrate as reasonable by the invention, the more all those aids which are afforded to other men are withheld from me, I should have strong hopes that in a country such as England, such advantages would be appreciated. But, Sir, I have some thoughts, that to get a new thing appreciated in this country, it is necessary, to avoid the secret opposition of the interested and the envious, that it should possess but little value, or else emanate from those parties. It has been said, that to gain the convictions of men by an appeal to reason is an irksome task, but that it is much easier accomplished by an appeal to their passions. Hence it is, I suppose, that humbug and quackery find support, where reason and truth appeal in vain.

Birmingham, Feb. 14.

T. CRADDOCK.

#### THE ELECTRIC LIGHT.

SIR.—I take the liberty of offering, for the consideration of your readers, the following observations, which I deem necessary to prevent prejudice operating against one of the patents, and which I have till now deferred, in order to assure myself of the correctness of my first impressions.

From a journal, pretending to be an impartial record of scientific pursuits, a careful reserve might have been expected in giving judgment on any invention; and therefore it is to be regretted that an opinion, unwarranted by palpable facts, has emanated from such an organ, and compromised its character by a wholesale condemnation of M. Le Molt's battery. That a certain bias may influence a member of the press to point out, with more zeal than prudence, the weakness of one party, and to defend the faults of the other, is natural enough; but it is probable that a more than ordinary influence prevails in this instance. The peculiar privilege enjoyed by the journal in question, of exclusively publishing a verbatim copy of the patent of Mr. Staité, has made its pages the object of special reference to vast numbers, who have taken a deep, and no undue, interest in the subject. As an insignificant sequence, followed in the wake of that voluminous document, the account, unembellished and unaided, of its unpretending rival. The audacity of entering into the lists with the favoured champion, was treated like the temerity of a rough, though trusty, terrier, who ventures within the favoured precincts of my lady's lap-dog. "Turn out the vile creature," cries her ladyship, and John, the footman, remorselessly kicks the rash adventurer down stairs.

Without urging my figurative illustration to run in *quatuor pedibus*, I may say that M. Le Molt has met with pretty nearly the same treatment at the hands of his commentator. "There is nothing good; there is nothing new; it is all paltry plagiary; the best thing he has is a poor imitation of one of Staité's minor details. We had almost made this a saving exception, but must renounce the thought." Such, in effect, is the dogmatic conclusion ostentatiously appended in an editorial parenthesis. Had we heard that the improvements in the carbon battery were not to be accepted as points of practical utility until they had been fairly tested, it might have been said with full impunity, so far as I am concerned. But to shut out investigation—to stifle opinion, by rude or unfounded denunciation, is not to be borne; and so long as I can raise my humble voice for "fair play," no such injustice shall pass unobserved.

I care not by whom the contrary opinion may be expressed, I do not hesitate to record my belief that there is a great deal in the Le Molt battery worthy of remark. There is an idea afloat that the carbon element of it is not new, and certainly I myself entertained the notion. But, having made every reasonable inquiry, I think it will be ascertained, that however well known its applicability for the purpose, no one has, ere now, proved its virtue. I had read of Cooper's battery (substantially the same as Bunsen's, and, for like causes, similarly neglected) being supplied with a gas charcoal, this left an impression that the negative element was the carburetted deposit of the gas retorts. Will it be believed that the carbon actually so described is composed of simple coke, and is as little likely to interfere with our new acquaintance, as if it never existed. Therefore do I say, we should hesitate to condemn this element, till the question is seriously examined. Further still, if this carbon be admitted

as an element, the metallic coating by the electrotype process is a most essential improvement, of undoubted novelty, and of decided utility. I consider it, or some other means of intimate metallic association between the connecting straps, or wires, and the carbon element (not pasting on tinfoil), absolutely indispensable. Now, let us turn to the patent of Staité, and see what it is that we have to surpass this, as we are told—a coating of tinfoil, "which is the same thing." For what?—to form the metallic connections of the galvanic elements, forsooth? No such thing, but to cover the carbon points, and preserve them from humidity, previous to being applied to their destined production of the electric incandescence. Well may Mr. Staité exclaim—"Oh! save me from my friends," for no thing but a most unbecoming favouritism could have suggested a remark, which shows that the writer was incompetent to give an ordinary interpretation of the plainest language, or that he wilfully misrepresented it.

I have said enough for the present to counteract any evil results of the hasty confidence with which some may have received the remarks I complain of. I am unwilling to trespass further on your valuable space; perhaps I may revert to the subject. In the meantime, I beg most distinctly to be understood, that I am not the apologist of any party. Indeed, I take this opportunity of saying, that my views are totally different from those of M. Le Molt. Whilst he looks on any interference with gas as a chimera, I presume to occupy advisedly a more advanced and hazardous position in saying, I think the day is by no means distant, when the witty allusion of *Punch* will be literally realised, and we shall see the electric light partially, if not entirely, extinguishing its dull and offensive opponents.

The great justification for disbelieving that notion, arises from the complication of the several pieces of machinery for regulating the carbon poles. These machines, as well Staité's as Le Molt's, are very clumsy, evidently resulting from a no great effort of mechanical genius. This is the consequence of a disadvantage that scientific men frequently labour under. Devoted as they are to peculiar studies, they trust to their abilities to guide them in a sphere of art practically unknown to them, and they waste their giant efforts in striding through a labyrinth, to which the dullest journeyman mechanic could give them a short and simple clue. "An humble digger may show us a rich mine." If the fate of our two patentees were staked on their regulators, as we may call the mechanism of their lamps, we fear that they would be soon distanced in the race of inventions. Be that as it may, I anticipate that, before 12 months pass over, a vast progress will be made towards the realisation of the opinion I have risked. I need hardly fear the imputation of rashness in saying so, when we hear such sound practical men as Mr. Highton declaring that there are some electricians who contemplate (and who possibly are now working practically to the end), that, soon or late, we shall be enabled to render the subtlest and most terrific agent in Nature subservient to our will.

Sages can, they say,

Grasp the lightning's pinion;

And bring down its ray.

From the starred domain.

Let us dwell for a moment in thought on this newly-developed theory, and it will be evident how comparatively modest are my pretensions.

City, Feb. 12.

F. W. C.

#### TRACKS OF TIMBER PAVING ON COMMON ROADS FOR STEAM-CARRIAGES.

SIR.—As an auxiliary to the railway system, the adaptation of locomotive steam-engines, to travel economically on common roads, is an important consideration. Notwithstanding the failures which have hitherto resulted from the many attempts which have been made to accomplish this object, it is to be hoped that, by perseverance and skill, success may ultimately reward those who have so long and zealously devoted themselves to it. Without entering into the general question, or indulging in any predictions as to the results of new trials, so far as the steam-carriages are concerned, the expediency of some of the means proposed as adjuncts may be fairly questioned. One of these is mentioned by Mr. Motley in your Journal of the 3d inst.—viz.: "the putting down tracks of timber paving." "By adopting this plan," he says, "engines, but little different to those in use on railways, will answer the purpose, so that the difficulties which have attended the attempts at locomotion on ordinary roads will, in a great measure, be obviated." So confident is Mr. Motley that success will certainly follow the use of such means, that he says—"Neither your dubious correspondent, or direct opponents, will dare to dispute it, unless they are regardless of reputation." This, Sir, is rather a strong denunciation against any who unfortunately may happen to differ in opinion with Mr. Motley, but who may still have some regard for their reputation. Nevertheless, he must not be surprised if his assertions be questioned, and, notwithstanding the risk to be encountered, that some of your numerous correspondents should venture to doubt the excellency of the plan he recommends. There is nothing new in the proposition; timber has been applied to this purpose in various ways for at least two centuries; there is no difficulty, therefore, of testing the value of the suggestions to re-introduce its use. We have only to recur to the history of railways and roads to ascertain its fitness for such a purpose. Such a reference to past experience will be found at variance with Mr. Motley's views, and, therefore, if the success of steam-carriages mainly depends on "the putting down tracks of timber paving," it may be very justly feared that their ovation is not quite so near as is anticipated.

The use of timber tracks on railways is coeval with their existence, which may be dated as some time between 1602 and 1649. They were continued to be very generally used in the north of England until the beginning of the present century, but are now nearly, if not wholly, abandoned. Referring such of your readers as may desire information as to the details of construction, to Mr. N. Wood's *History of Railways*, it may be sufficient to state here, that although these railways were found to be much superior to common roads, for the conveyance of coals from the pits to the shipping ports, "yet the frequent renewal of the timber rails and sleepers were attended with considerable expense—not only of time and labour, but also in the cost of the material." To prevent the rapid destruction of the wooden rails, thin bars of wrought-iron were laid upon and nailed to them. There was great difficulty experienced in securing the plates fast to the rails, as the latter were constantly working loose, and it was found that the expense of maintaining the way in good working order was very little, if at all, reduced. The next improvement adopted was naturally suggested by the last expedient, and iron rails were resorted to, and, as is well known, are now very generally, if not universally, used. This change in the material of the rail, or track, was not made until its expediency had been amply proved; and as the first cost of a railway is thereby very considerably increased, it may be fairly presumed that this augmented capital is amply compensated by the saving effected in the maintenance of the way. Again, to revert to timber for such purposes must, therefore, be very equivocal policy, to say the least of it, and directly opposed to the implied advice given in the good old proverb, quoted by your correspondent, Mr. Motley.

It may probably be said, that it is not in contemplation to use rails for steam-carriages, but wheel-tracks, made of planks, or wood paving. To both of these modes the same objections apply, and there are others of equal, if not greater, cogency, which may be urged, in addition to what has already been mentioned. If planks be used, the rapid destruction and waste of timber will be very great. A short time ago, a road of this kind was made in Kent, and, as was to be expected, proved a complete failure. The wheels speedily wore deep runs in the planks, when they split, or broke, and had to be replaced by new ones, whilst only a small proportion of the timber was actually worn away. Different kinds of wood were tried, and great pains were taken in properly laying and bedding the planks, but with no better result. The interruption caused to the traffic by the frequent repairs required, and the great expense of labour and timber incurred in consequence, induced the proprietor to abandon the timber track, and substitute iron rails. A very considerable reduction in the cost of the traffic ensued on this change being made, and it is now carried on without those inconvenient interruptions which were so frequent where timber tracks were employed. This objection, however, does not apply with equal force to tracks formed of timber blocks or paving; but there is another difficulty to be encountered and overcome before this mode of using such a material can be safely recommended. It is well known that, in wet or damp weather, even on iron railways the adhesion of the driving-wheels of an engine is so much diminished, as very considerably to impede its progress, and to render the starting of a train, or its ascent up an inclined plane, a matter of difficulty. This is caused by the "slipping" of the wheels on the rail, and is evidently a serious inconvenience. Those who have observed the effect of wet, or damp, on the wood pavement in London, will readily appreciate the force of the objection to such tracks for steam-carriages. Its great slipperiness far exceeds that of the iron rails, and renders even an attempt to walk upon it somewhat difficult. Taking these facts into consideration, it is surely no great "daring" to dispute the probability of steam carriages ever being able to



ascend the steep and abrupt hills, so common on turnpike roads, by these means. Until these difficulties, however, be overcome, it is evident that there are insuperable objections to the use of timber for such a purpose, in which every way it may be employed. If the steam-carriages cannot be so constructed as to travel profitably on Macadamised and paved roads, recourse might possibly be had with advantage to light iron rails, or, if this be objected to, some wheel-tracks might probably answer the purpose. Such wheel-tracks, constructed of hard marble, have long been used in Florence; and in 1830 similar tracks, made of granite, were laid down in the Commercial-road, London, under the superintendence of Mr. James Walker, C.E., the benefits, or disadvantages, of which may be easily ascertained. On the coal wharves, in this neighbourhood, long narrow straps of iron (9 in. wide, and 12 ft. in length), made of boiler plates, have been advantageously substituted for the ordinary timber wheeling planks. These circumstances are mentioned, not as advising the adoption of similar means, but merely to direct Mr. Motley's attention to them, and to show that, if wheel-tracks be indispensable, it does not necessarily follow that they should be constructed of timber, which experience has proved to be unfit for such a purpose. Stone and iron plates may be tried, at least experimentally, and adopted or not, as the results may warrant.

North, Feb. 10.

J. RICHARDSON, C.E.

#### IMPROVEMENTS IN WORKING RAILWAYS.

[Specification of patent granted to Samuel Thornton, of Birmingham, merchant, and James Edward McConnell, of Wolverton, Buckinghamshire, engineer, for improvements in steam-engines, and in the means of retarding engines and carriages on railways, and in connecting railway carriages or waggon to another, by signals or otherwise.]

These improvements consist, in the first place, in forming the piston of packing rings, having conical interior surfaces, and causing the surfaces of other rings—also made conical, but in a reverse direction—to act against them. Elastic metallic discs rest upon ledges, made at the inner sides of the same—spiral springs being interposed between such discs, and pressing them outwards; thus the conical surfaces of the second-named rings press against the interior conical surfaces of the first-named, or packing rings, and close contact with the sides of the cylinder is thereby maintained.

These improvements consist also in a novel arrangement of steam-engine chimneys and blast-pipes. To increase the draft in the chimney, without adding to its height, it is proposed to form in the chimney of a locomotive engine several shafts, and to have the like number of blast-pipes in the exhaust pipe, so that there shall be provided a blast-pipe for each shaft of the chimney.

These improvements further consist in a novel arrangement of the eduction passages, effected by forming an additional opening in each passage, with a valve fitting such opening, each end of such valve being fixed on the spindle of the steam valve; immediately opposite the additional openings, at the other side of the valve chamber, are other orifices, which, upon the alternate uncovering of such additional openings, allow the steam to pass from the cylinder to the chimney—thus facilitating its escape, and effecting the reduction of back pressure on the piston.

These improvements further consist in attaching the buffers to the axles, instead of attaching them in the usual manner, or they may be suspended in a frame connected to the axles—thus bringing all the buffers into the same horizontal right line; and such buffers are to be formed hollow, containing a chain that extends from the engine to the carriage, where the guard is seated. Upon a pulley, keyed on the axle of a friction wheel, each end of this chain is wound; and, upon bringing down such friction wheel upon the periphery of the running wheel, the same will make a revolution with the pulley, whereon the chain will be wound, and a signal communicated to the guard—thus affording a complete plan of signalling between that functionary and the engine-driver; and, further, the said chain, being caused to act upon the breaks through the medium of toothed gearing, the retarding of the progress of the train will be effected simultaneously with the operation of signalling.

These improvements likewise consist in a novel mode of coupling, which will allow the carriages of a train to be coupled together from the side of the carriage; this is effected by having a rod passed through the centre of the coupling hook, such rod having a handle at each end, and there is keyed upon this rod a coupling loop, with the hook between its ends, and by this means it can be attached to, or detached from, the front or hinder carriage, as may be necessary. The rod for bringing back the buffers is worked by mitre and bevil wheels, driven from the side of the carriages. By the adoption of this mode of coupling, the necessity of the railway attendants going in between the railway carriages, in order to couple them together, is done away with, thus preventing the occurrence of any of those horrible accidents that have been now occurred to railway attendants, whilst thus employed. The patent right is claimed for the invention substantially as above described.

Patent-office and Design Registry, 310, Strand, Feb. 15.

#### THE BALLOON RAILWAY FOR CALIFORNIA.

The novelty of this announcement having attracted our attention, we were induced to visit the patentee, who obligingly showed us his model of the projected railway. The principal new feature presented in the present scheme is the avoiding of all cuttings or tunnelling, and by simple machinery, being able to overcome the difficulty of guiding balloons, or other aerial machines, to a given point. In the construction of his railway, the inventor proposes that large solid planks should be laid on a line of road; on these, an elevated chair, or saddle, of iron, or wood cased with iron, should be securely fastened; on this a species of train would run—the wheels of which, instead of running on the rails, as at present practiced, would, by the assistance of grooves, slide underneath the saddle, which would secure them from slipping from their places; to these a line would be attached, communicating with the balloon, which is not to be elevated higher than 40 or 50 ft. The propulsion of the wind on the balloon is supposed to be of sufficient force to work the trains at a rate of 50 or 60 miles an hour; while the weight of the train and the guide rope would keep the balloon from swerving from its place. It is proposed that a given number of balloons could start from Washington with a favourable wind; as these would all be going in one direction, no possibility of collision could occur. Should the wind not be directly fair, it is proposed, by the assistance of sails, or other machinery, to make use of the wind from other points of the compass, as in a ship; in this case, the running train would, to a certain extent, act as a rudder. In case of being becalmed, passengers might be lowered by means of ropes in a car. The balloon is supposed to have such motive force as to be able to carry the trains over hills and down declivities; and in this manner the inventor proposes to conquer the difficulties of tunnels and cuttings; while, on marshy ground, the line would be carried over upright timbers, firmly secured. The same balloons which carry the passengers from Washington to California, on arrival at their termini, to return to their place of embarkation, as soon as a favourable opportunity occurs. It is not the intention either to carry ballast or let out the gas at the stopping points. There is also exhibited a model of what the patentee terms a "wheel-wigged ship," a slight description of which will be found in our advertising columns. The idea suggested itself from the continual desertion of vessels on the South American coast for the gold districts of California, and the plan enables the ship to be worked by the lame and the blind, who could not be induced to run away, but would be ready to work the ship home when required. Although unlike anything we have before heard of, the principle of action is simple and appears feasible. It is certainly worthy the attention of shipowners trading to Chili, California, &c., and an inspection of the model at once conveys a good idea of the proposed plan. The models can be seen every day at 30, Great Portland-street, where the patentee gives any information or explanation that may be required.

**GRIST'S REVOLVING FURNACE.**—This furnace is stated to possess superior advantages to any of the same kind which have hitherto been before the public. The fire-bars, which revolve in the usual way, are loose in the revolving frame, and are cast either singly or in series of three or four; and when one, or one of a series, gets out of order, it is easily taken out, and another slipped in its place. The fuel is fed from a hopper over the front of the furnace, and the atmospheric draught is thus not interfered with; while the same mechanical movement which causes the hopper to throw a fresh feed of coal into the furnace, pushes simultaneously forward into the heart of the furnace the preceding supply which had then become coked; the fuel is thus kept in an exact ratio with the consumption, smoke is prevented, and the maximum heating effect is obtained from any given quantity of fuel.

#### OAK FARM COAL AND IRON-WORKS, STAFFORDSHIRE. IMPORTANT SALE.

In the matter of ALEXANDER MACDONALD, PATRICK, JOHN WALKER, JAMES BOYDELL, and CHARLES BLANEY TREVOR ROPE, late of the Oak Farm Works, in the parish of KINSWINFORD, in the county of STAFFORD, ironfounders, ironmasters, and edge tool manufacturers, dealers and chapmen, and co-partners, against whom a FIAT IN BANKRUPTCY, dated the 11th day of February, 1848, hath been issued.

TO BE PEREMPTORILY SOLD

(Pursuant to an order of the Right Honourable Sir James Lewis Knight Bruce, Knight, one of the Vice-Chancellors acting in bankruptcy, dated the 25th day of March, 1848, and made on the petition of Sir Stephen Richard Glynn, Bart., and others, and, also pursuant to an order of John Balguy, Esq., Q.C., the commissioner acting in the prosecution of the above-mentioned fiat, made the 21st day of September, 1848, by virtue of under the authority of the last-mentioned order.)

BY AUCTION, BY MESSRS. OATES AND FERRIS.

AT DEE'S ROYAL HOTEL, BIRMINGHAM, in the county of WARWICK, on Tuesday, the 5th day of April next, between the hours of one and eight o'clock in the afternoon, in one or more lots or lots, as may be agreed on at the time of sale, and subject to conditions then to be produced. All those very extensive and celebrated COAL, IRON, and STEEL WORKS, BLAST FURNACES, MILLS, FORGES, DWELLING HOUSES, LANDS and premises, with the valuable MINES of COAL, IRON-STONE, FIRE BRICK, and SURFACE CLAY, and all other the MINES and MINERALS remaining ungoten in and under the same, situate in the several parishes of Kinswinnford, Himley, and Sedgeley, in the county of Stafford, and late in the occupation of the Oak Farm Company, well known as the

#### OAK FARM COAL AND IRON WORKS,

Comprising the COLLIERY, BLAST FURNACES, and MALLEABLE IRON WORKS, with the buildings, shops, offices, workmen's dwelling-houses, and appurtenances thereto respectively belonging, together with the fixed plant and machinery, &c., as hereunder described.

The MINERAL ESTATE comprises the colliery and site of the works, containing about 103 acres (more or less) of which the undermentioned portions of the mines and minerals hitherto worked now remain ungoten, namely:—

Of the thick or tan yard coal about ..... 24 acres.  
Of the brooch coal about ..... 55 "  
Of the heathen coal, and the gubbin ironstone about ..... 55 "  
Of the white ironstone about ..... 41 "  
No. 1 and 2 forges, condensing-engine, of 50-horse power, in brick engine-house, and stacks, with one boiler, seating, flues, &c., complete.

Also the MINES and MINERALS in and under two other detached fields, containing together about 18 acres, near to the above, the whole of the mines under which remain ungoten.

These fields contain, in addition, a valuable mine of foundry sand, from which the works have been supplied.

To the Mines and Minerals as above, 18 pit-shafts have been sunk, with the workings, gate-roads, headings, engine-pits, drifts, &c., complete.

The IRON-WORKS consist of two blast-furnaces, with superior blowing engine, 60-horse power, in brick engine-house, boilers, blowing apparatus, pipes, &c., complete to the tuyeres, and water balance left to raise the materials, large casting-house and foundries, bridge-house, &c., retinning and blast-pipes to ditto, and brick-built stoves to foundry.

The MILLS and FORGES have several plants and machinery, arranged as follows:—

Mill-engine of 80-horse power, in brick engine-house, with three boilers and seating, flues and chimney-stack.

Main machinery, timber frames, cast-iron shafts, wheels, and carriages, comprising the motive-power from the engine to all the roll-trains and shafts to the shears, turning-lathe and rail-saw, and terminating at the point of connection—namely, where the motion to each part is disengaged, or connected, by working the fast or fixed cord.

No. 1 and 2 forges, condensing-engine, of 50-horse power, in brick engine-house, and stacks, with one boiler, seating, flues, &c., complete.

Main machinery, frames, shafts, wheels, and carriages, all as above described, and to the point above limited in the mill, two hammers, with cam rings, &c., complete.

The above mill and forge-works are enclosed, and covered with spacious roofs, supported by cast-iron pillars and brick walls.

No. 3 FORGE (worked by portable engine), main machinery, frames, shafts, wheels, and carriages, all as before named and limited, complete to the fast crabs of the shears, rolls, and the guide rail-trains, with cam rings, &c., complete. Three firing boilers, with seating and flues, and large chimney-stack to ditto.

STEEL-WORKS, consisting of two furnaces, casting-house, shops, and warehouses.

FIRE BRICK and CEMENT CLAY WORKS.—Steam engine of thirty-horse power, in brick engine-house, with two boilers, seating, flues, &c., complete. Brick ball mill, and fitting shops, stone houses, and foundries, and also millwrights', pattern makers', and engineers' shops, buildings, &c.

Engine shed and store room, lathe house, boiler shops, and tube mill, and a number of shops for various manufacturing purposes.

Adjoining the works are large and commodious offices, with dwelling house, stable, and outbuildings attached.

Canal basin and two large warehouses, with boat loading slips in each, on the Stour-bridge Extension.

Stour wharf and railroad in the occupation of Mr. B. Gibbons, under an agreement for lease for 21 years, from the 1st of December, 1845, and will be sold subject to such agreement, and the other terms on which Mr. Gibbons holds the same.

N.B. Mr. Gibbons holds some spare land, formerly spoil, adjoining his wharf, under a verbal agreement as tenant from year to year.

Also thirty-nine WORKMEN'S TENEMENTS or DWELLING-HOUSES, with gardens and appurtenances thereto belonging, near to the works.

Also all that substantial DWELLING-HOUSE, with stabling, outbuildings, and appurtenances thereto belonging, now in the occupation of Mr. John Griffiths.

Also all that conveniently situated and commodious DWELLING-HOUSE, now used as a public-house, with the garden, stabling, outbuildings, and appurtenances, and water corn mill, now in the occupation of Mr. John Cartwright.

The whole of the above extensive works and premises are held under lease from Sir Stephen Richard Glynn, Bart., for 31 years, from the 25th day of December, 1835, whereof 18 years are now unexpired, together with the benefit of any extension thereof which there may be an understanding with the landlord to grant (if any such exists), and will be sold subject to the rents and royalties by the said lease reserved, and the covenants therein contained; and also subject to a mortgage of the said premises to George Talbot, Esq., of Green Hill, near Kidderminster, for 30,000l.

The Oxford, Worcester, and Wolverhampton Railway Company have a branch to the above works.

A copy of the working plans of the minerals, made by the mine agent, employed at the works, and a copy of the lease, and also of the terms under which Messrs. Chance and Co. work the fire clay mines, and of Mr. Gibbons' agreement for the wharf and railroad, may be inspected, and further particulars obtained at the offices of Messrs. Cloves, and Unthoff, solicitors, Stourbridge; at R. Valpy's Esq., official assignee, Waterloo-street, Birmingham; at Mr. Griffiths, at the Oak Farm Works; and at Messrs. Friswell, solicitors, New Bank Buildings, London; and on and after the 1st of March next, particulars with the lithographed plans annexed, may be obtained as above; and at the following places:—viz. at the offices of Messrs. Cloves, Wedlake, and Selwyn, solicitors, 10, King's Bench-walk, Inner Temple, London; Messrs. Motteram, Knight, and Emmett, solicitors, Bennett's-hill, Birmingham; William Talbot, Esq., solicitor, Kidderminster; and of the auctioneer, Stourbridge; and at the offices of the following newspapers:—viz. The Midland Counties Herald, Birmingham; the Liverpool Mercury, Worcester; the Worcester Chronicle, Stourbridge; the Wolverhampton Chronicle, and the principal newspapers in the neighbourhood.

February, 1848. COLLEGE, CLOVES, and UNTHOFF, Solicitors, Stourbridge.

**GREAT ST. JUST CONSOLS TIN AND COPPER MINING COMPANY.**

These MINES are situated in the parish of ST. JUST, in CORNWALL, one of the richest mineral parishes in the county, and are bounded on all sides by rich and prosperous tin and copper mines—many of the lodes of which are known to run into these mines. The reports of the various mining captains, who have lately inspected the sets, speak of them in the most flattering and encouraging terms, and strongly recommend the working of them.

These reports are set out at length in the prospectus of the company, which can be obtained at the offices of the committee of management (which is already formed), No. 3, John-street, Bedford-row, London, where also every other information can be obtained, together with the form of application for shares, &c.

**STENSON'S EMISSION ROTARY-ENGINE.**—Our readers are generally, most probably, aware that the class of rotary-engines, termed "emission," are those in which the power produced is by the simple emission of the steam from orifices around the circumference of a hollow wheel, and the engine revolves by the force of recoil, on the same principle as a rocket moves through the air. This principle of rotary-engine is more out of public favour than, perhaps, any other, from the great loss of power which has hitherto attended it. The one patented by Mr. Stenson consists in employing two emission wheels, instead of one; one of these wheels is keyed to the main axle, and the other rotates freely upon it, being kept steam-tight by means of a stuffing-box. The two wheels are of the same diameter, and revolve parallel to each other. The axle, arms, and rims are hollow. The rim of each has two or more oblique emission ports—those of one wheel being placed at opposite quarters of the circle to the other, and those on one wheel are inclined the reverse way to those on the other, so that the two wheels, when set in motion, revolve necessarily in opposite directions. The opposite faces of the two wheels are indented after the manner of the buckets of an overshot water-wheel, and, consequently, the steam emitted from each wheel is projected against the bucket-faced periphery of the other, causing each wheel to serve as a fulcrum for the steam of the other to act against. The effective power of both wheels is thus transferred to the axle, and may be transmitted thence to any working shaft, through the medium of bevil gear, or bands and pulleys.

**MANCHESTER, SHEFFIELD, AND LINCOLNSHIRE.**—An important branch of this line has been opened for public traffic. It is a short line of 7½ miles, by means of which a junction with the Midland Railway will be formed, and the distance between Derby and Manchester considerably shortened, and passengers will avoid going round by Macclesfield. The gradients are 1 in 150. There is one tunnel on the line 374 yards long. The highest embankment is 31 feet.

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OF ROYALTY AND THE AUTHORITY OF THE FACULTY.

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Being made from the prescription of an eminent physician, they are confidently recommended to persons subject to the above complaints.

Allow the Lozenges to dissolve in the mouth gradually.

Prepared and sold, in boxes, 1s. 1½d., and tins, 2s. 9d., 4s. 6d., and 10s. 6d. each, by THOMAS KEATING, Chemist, &c., No. 79, ST. PAUL'S CHURCHYARD, LONDON.

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Sir,—Having been attacked by the influenza, a short time ago, it left me with a very troublesome cough—was recommended to try your Lozenges, which, I am happy to say, completely cured me, after only taking half a box of them. I shall always feel the greatest pleasure and confidence in recommending your Lozenges to my friends.

I am, Sir, your most obedient servant, THOS. E. DAVIS.

Thomas Keating, Esq.

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just received of the efficacy of Dr. LOCOCK'S PULMONIC WAFERS:—"Man of Ross House, Ross, Jan. 31, 1848.—Gentlemen: A lady, a few months ago, told us she should never fear a consumptive cough again as long as she could get a box of Dr. Locock's Wafers, although the greater part of her family had died of consumption. (Signed) Carey, Cocks, and Roper."—Dr. Locock's Wafers give instant relief, and a rapid cure of asthma, coughs, and all disorders of the breath and lungs. To singers and public speakers they are invaluable for clearing and strengthening the voice; they have a most pleasant taste.—Price 1s. 1½d., 2s. 9d., and 10s. 6d. per box.

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Beware of Imitations.—Unprincipled persons, chemists and others, prepare counterfeits of this popular remedy. The public is, therefore, cautioned not to purchase any "Pulmonic" Medicine or Wafers, unless the words "Dr. Locock's Wafers," appear in white letters on a red ground in the Government stamp, outside each box; without which all are counterfeits and an imposition.

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and decay of the generative system, from excessive indulgence, infection, and the immoderate use of every-thing, with remarks on marriage, and the means of obviating certain disqualifications, illustrated by 26 coloured engravings. By R. & L. PERRY & Co., consulting surgeons, 19, Berners-street, Oxford-street, London. Published by the authors; sold by Strange, 21, Paternoster-row; Hannay, 63, and Sanger, 150, Oxford-street; Starke, 23, Titchborne-street, Haymarket; and Gordon 146, Leadenhall-street.

PART THE FIRST treats of the anatomy and physiology of the reproductive organs, and is illustrated by six coloured engravings.—PART THE SECOND treats of the consequences resulting from excessive indulgence, and their insidious effects on the system, producing mental and bodily weakness, nervous excitement, and generative incapacity; it is illustrated by three explanatory engravings.—PART THE THIRD treats of the diseases resulting from infection, either in the primary or secondary form, and contains explicit directions for their treatment. This section is illustrated by 17 coloured engravings.—PART THE FOURTH contains a prescription for the prevention of disease by a simple application, by which the danger of infection is obviated. This important part of the work should not escape the reader's notice.—PART THE FIFTH is devoted to the consideration of marriage and its duties. The causes of unproductive unions are also considered, and the whole subjected to critical and philosophical inquiry.

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These engines are erected at a comparatively trifling expense, and are easily worked.

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TWO 40-horse power ENGINES, suited to condense either by air or water.

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A PAIR OF OSCILLATING MARINE ENGINES, of 10-horse power.

PRICE.—£200 per horse-power.

These engines are quite new, with boiler, condenser, and regulating damper—all got up in the best and simplest manner. They are much simpler, and almost beyond comparison more compact than the Cornish engine, also more safe and economical than even those engines, yet the price of the Cornish is nearly double that at which these are offered. Parties wanting engines will find in the above good bargains.

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**BRISTOL AND EXETER RAILWAY COMPANY.**—Notice is hereby given, that the next HALF-YEARLY GENERAL MEETING of the proprietors of this company will be HELD, in pursuance of the Act of Parliament, at the White Lion Hotel, in the city of Bristol, on Thursday, the 1st of March, at Twelve o'clock, for the election of four directors, in the room of those who retire, and for other affairs.—The chair will be taken at One o'clock precisely.

The retiring directors may be re-elected.

The transfer-books will be closed on Monday, the 19th of February, and not be reopened until after the said general meeting, on the 1st of March.

The dividend and interest for the half-year ending on the 31st of December, 1848, will be payable to those shareholders who stand registered when the transfer-books are closed on the said 19th of February.

Shares in arrear do not entitle the holder to vote, nor are proxies available, unless lodged with the secretary five days, at the least, before the meeting.

By order of the board of directors.

Bristol Office, 30, Broad-street, Jan. 26, 1849. J. B. BADHAM, Secretary.

**RIDER'S RAILWAY BRIDGE.**—TO RAILWAY COMPANIES.—THIS BRIDGE has now been for 18 months in DAILY USE (having a double track) on the HARLEM RAILWAY, in the State of New York, United States. The Erie Railway and the Newhaver Railway Companies have likewise adopted it.

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As regards economy, it can be erected at a cost not exceeding that of a WOODEN BRIDGE, of equal capacity.

Applications to be made to Mr. Moulton, the patentee, Bradford, Wilts; or to Mr. Howard Jacobson, Suffolk-lane, Thames-street, London.

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The PATENT METAL is marked with a squirrel, and the initials "R. J. B.," and is to be had only at the "Cwmbrain Iron-Works," near Newport, Monmouthshire.

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